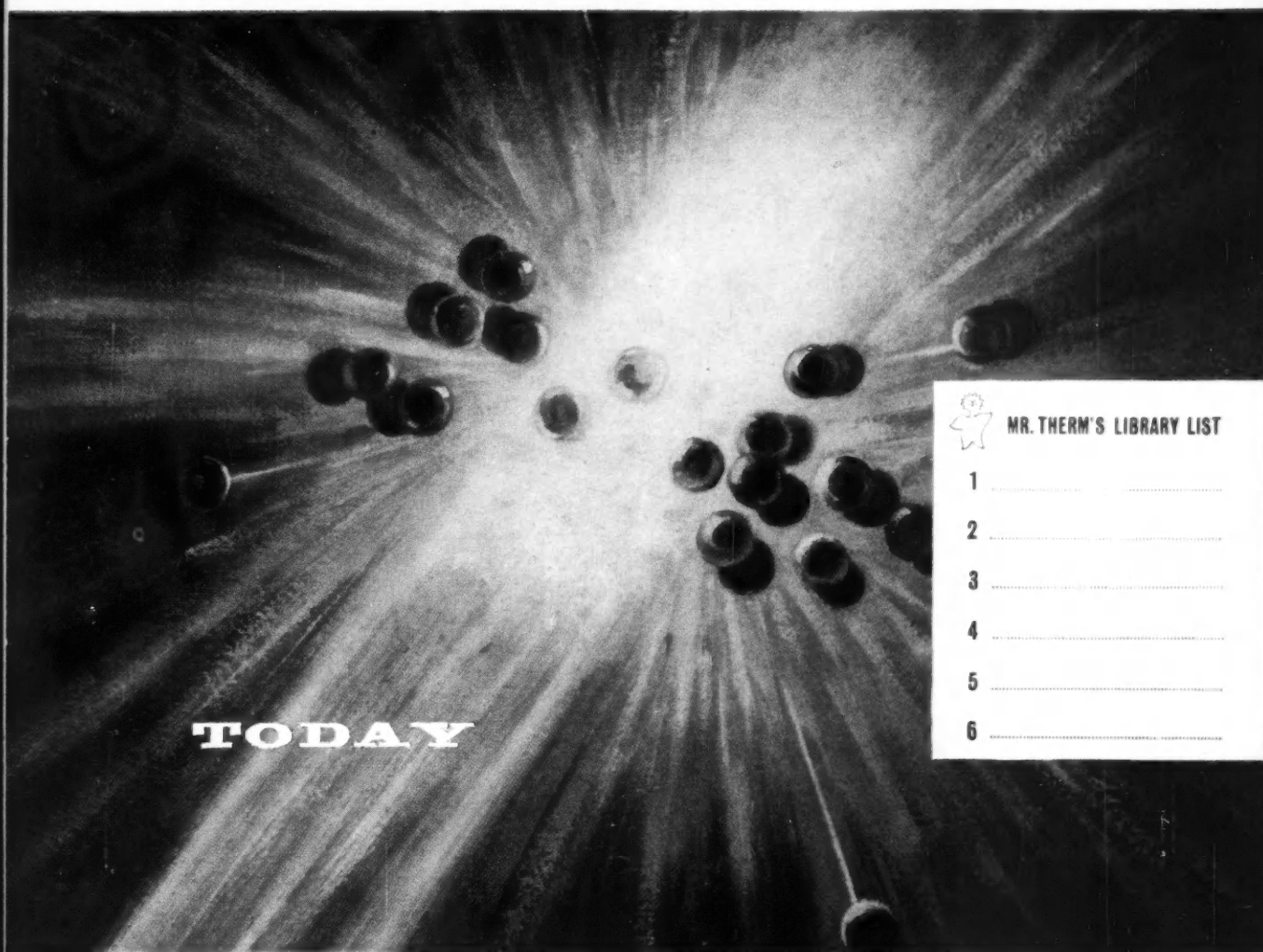


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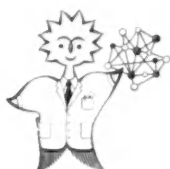
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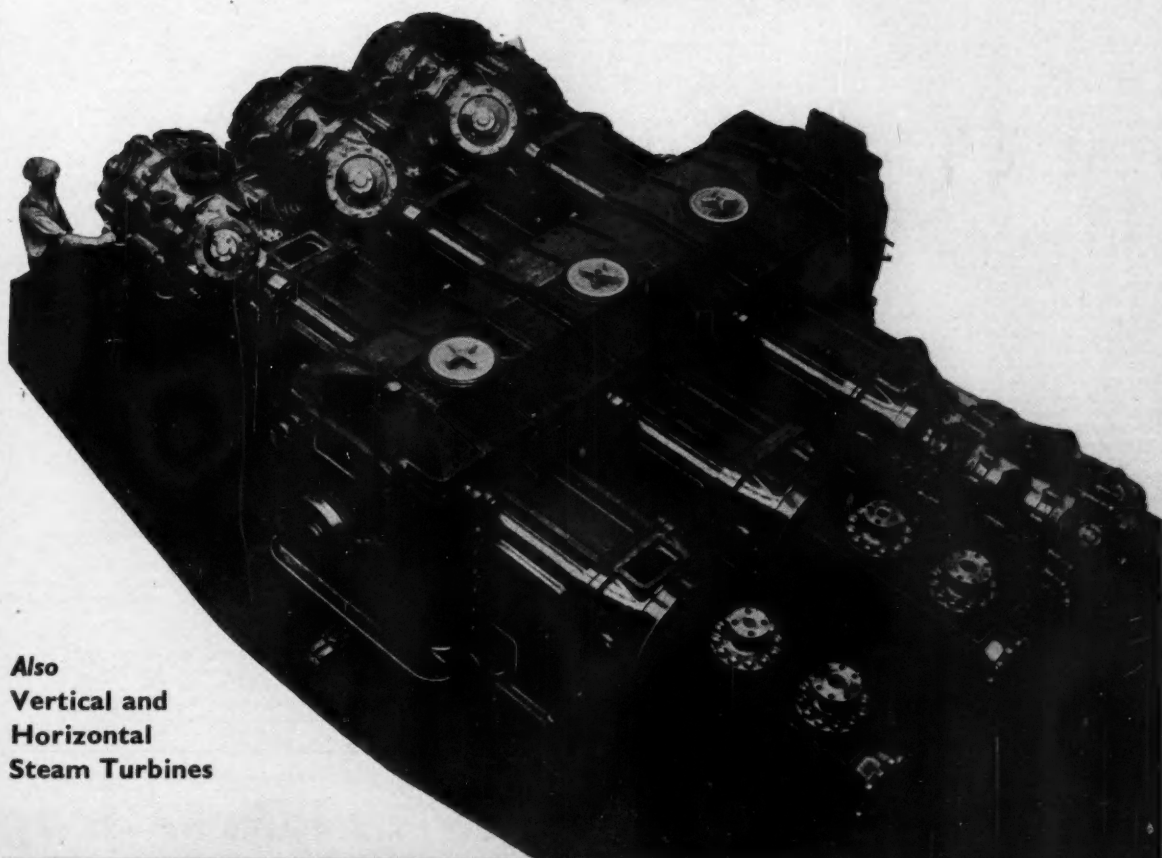
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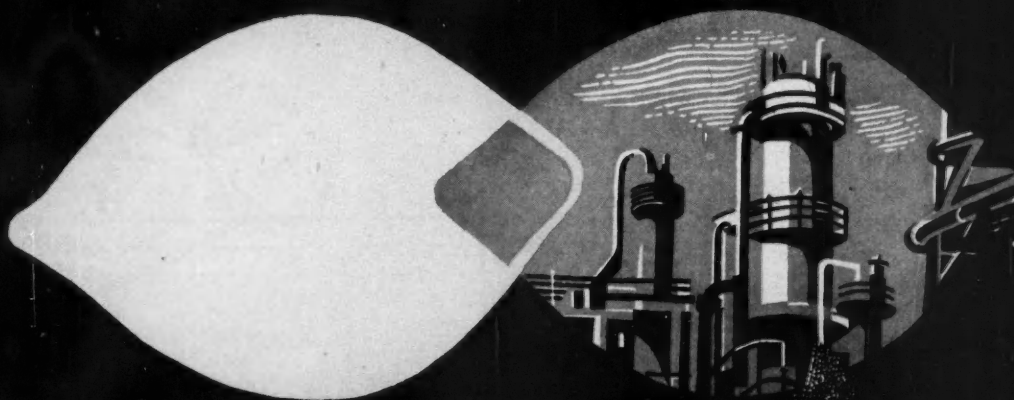
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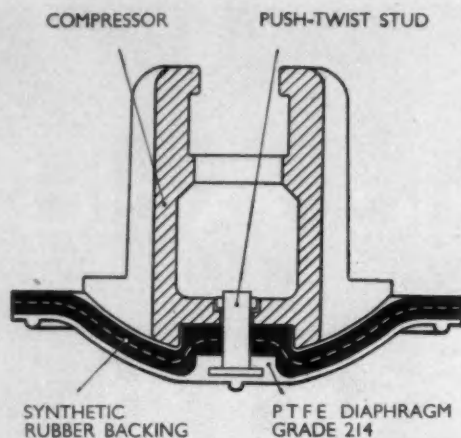
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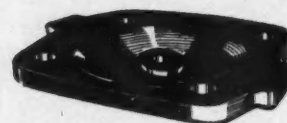


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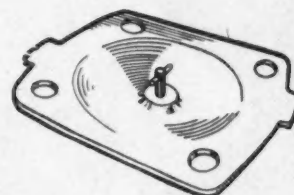
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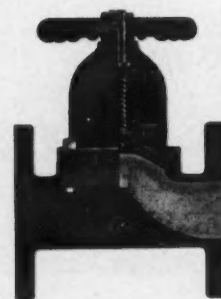
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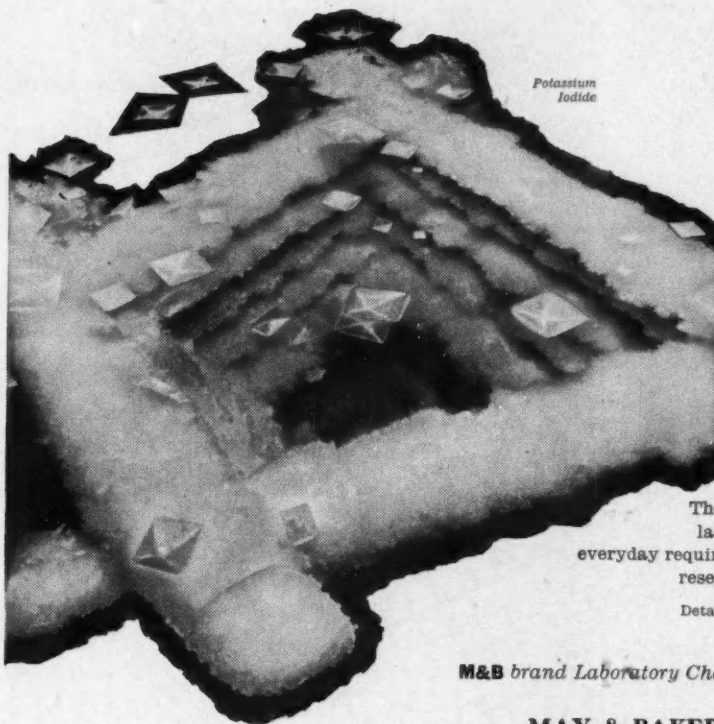
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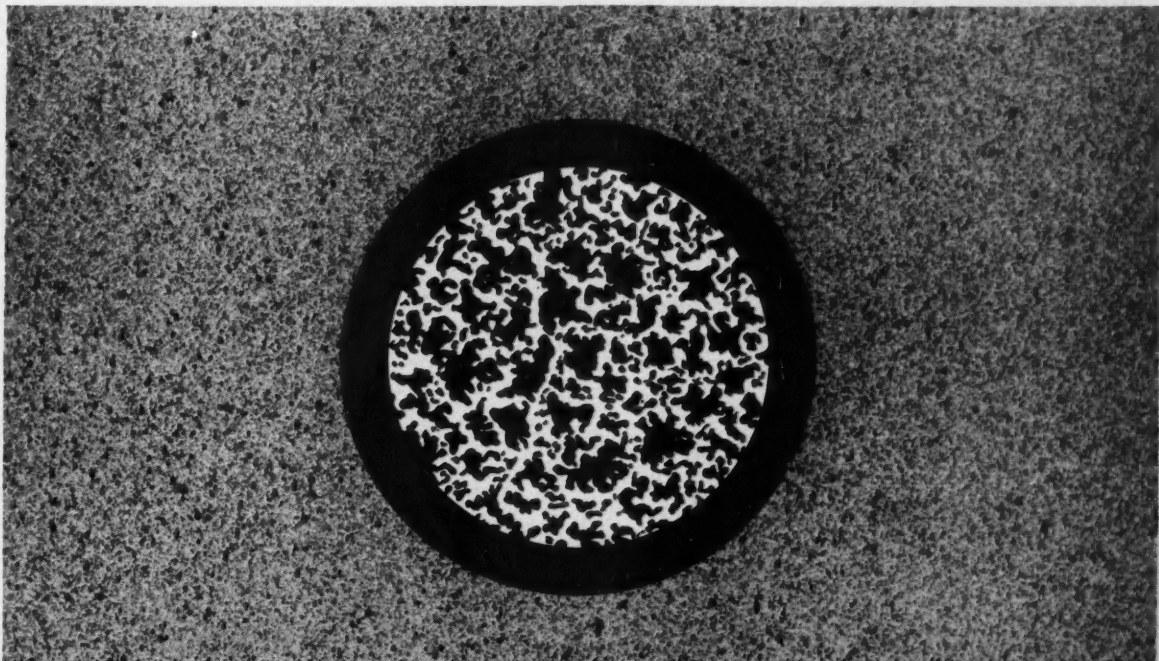
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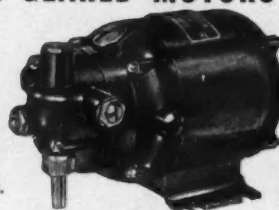
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300	16 oz. in.	25	4 lb. in.
150	24 oz. in.	18.8	4 lb. in.
100	32 oz. in.	12.5	4 lb. in.
75	36 oz. in.	9.4	4 lb. in.
50	3 lb. in.	6.25	4 lb. in.

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108	7 oz. in.	9	30 oz. in.
54	10 oz. in.	6.7	35 oz. in.
36	12 oz. in.	4.5	44 oz. in.
27	15 oz. in.	3.35	3 lb. in.
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50-150	20 oz. in.	6-16.5	4 lb. in.
32-100	32 oz. in.	4-11	4 lb. in.
25-75	40 oz. in.	3-8.25	4 lb. in.
16-30	48 oz. in.	2-5.5	4 lb. in.

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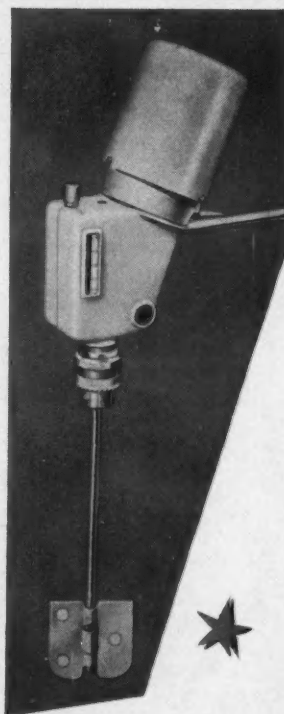
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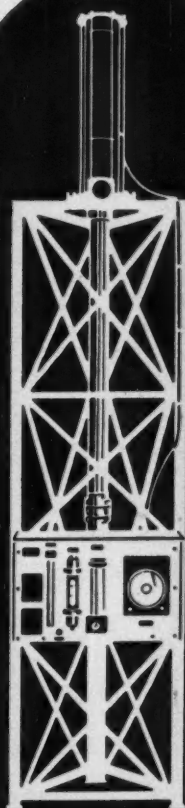
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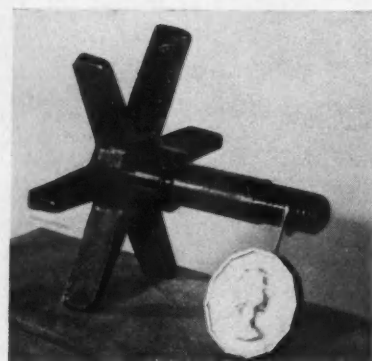
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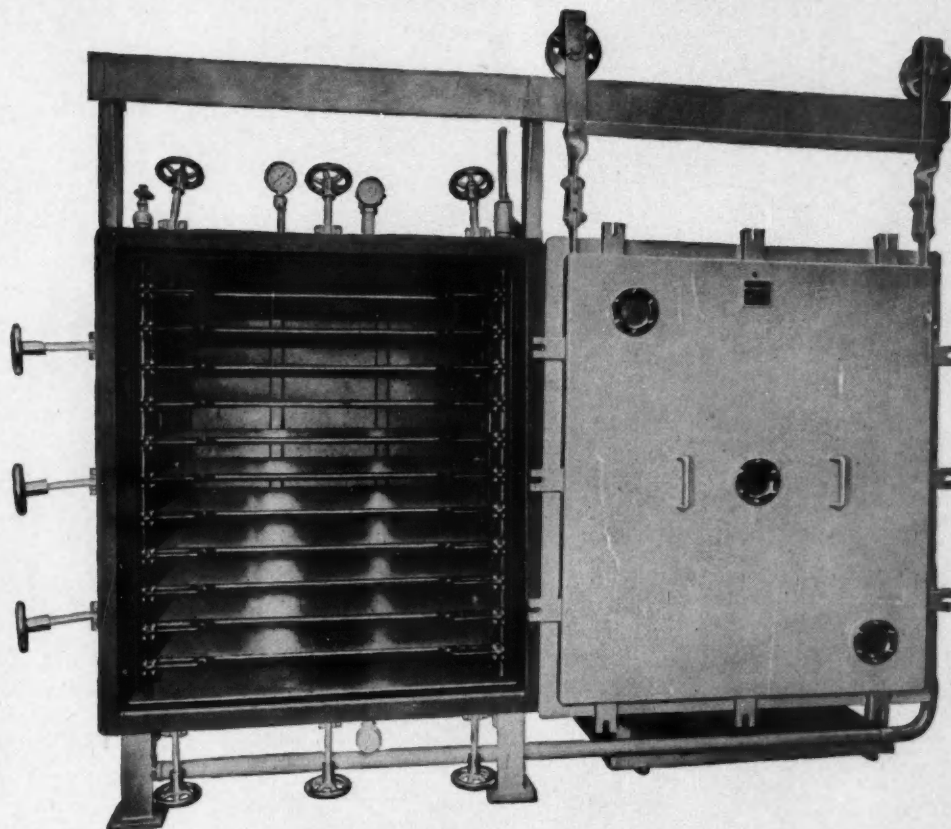
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Cyclododecylamine
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*Cycloheptyl urea
Cyclohexyl urea
Cycloheptane
Cycloheptanol
Cycloheptanone
Cycloheptyl bromide & chloride
Cycloheptylamine
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1, 10-Diaminodecane
1, 11-Diaminoundecane
1, 12-Diaminododecane
1, 13-Diaminotridecane
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1, 4-Dibromobutane-2
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2, 5-Dibromohexane
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3, 8-Dimethyldodecadiene-4, 6-diol-3, 8
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n-Heptadecanoic acid nitrile
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Heptadecylic acid
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Pentadecylic acid
Pentadecandioic acid dimethylate
Pentamethylene dinitrile
n-Pentadecanoic acid nitrile
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*Pimelic acid
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Tetrahydropyran
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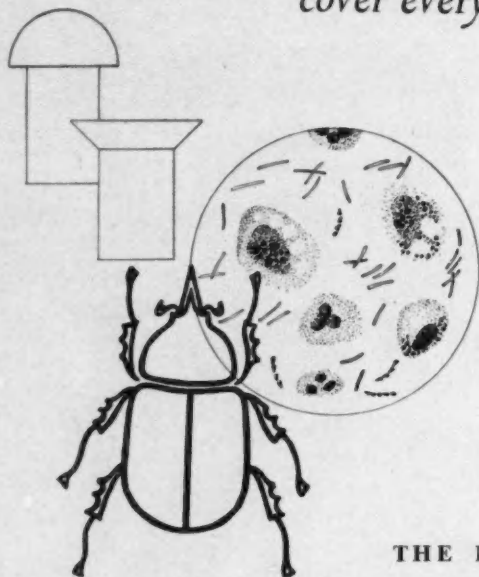
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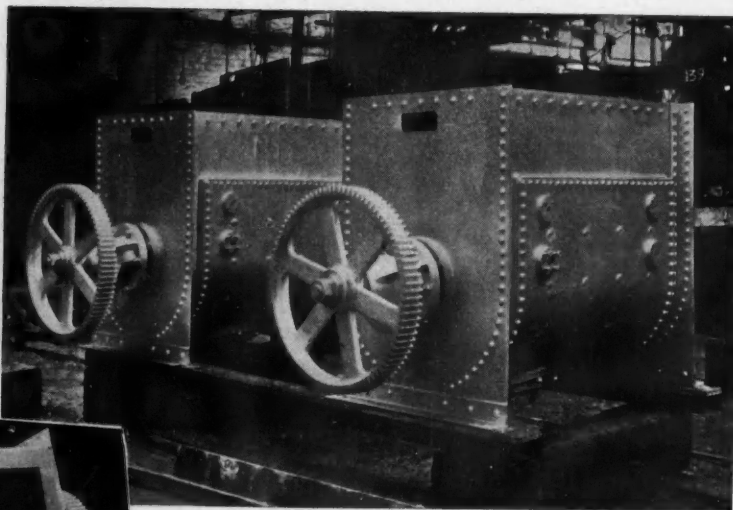
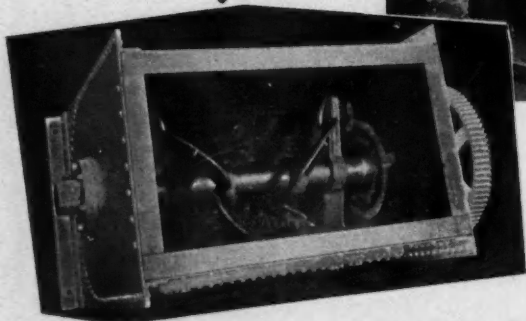
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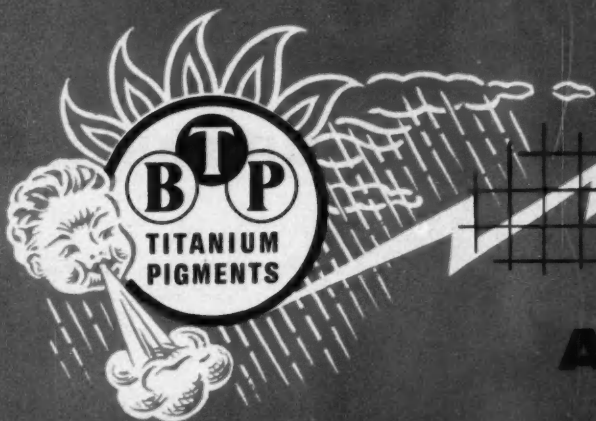
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CHEMICAL AGE

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ORAL CONTRACEPTIVES

WITHIN the last few weeks, attention has been focused on oral contraceptives, just as had been suggested earlier this year (CHEMICAL AGE, 9 January, p. 63). Recently it was announced that a controlled clinical trial of a birth control drug was being undertaken in the Birmingham area, and last week, Mr. G. C. R. Eley, chairman of British Drug Houses Ltd., indicated that his company expected to be able to give some details of their research for a suitable oral contraceptive. The B.D.H. product, as far as is known, has only been tested on animals, and it appears that the nature of the evidence available as to its effectiveness is of a very provisional nature.

News of the new drug was released by B.D.H. for the benefit of their shareholders who are having to consider the bid made by Fisons Ltd. for the company. Sir Clavering Fison last weekend stated that in making their offer for B.D.H., Fisons had no prior information about the product.

Drugs which, taken orally, could prevent conception, have been in the news since 1952. In that year, the U.S. journal *Science* carried a report about orally administered phosphorylated hesperidin, which was stated to prevent pregnancies by inhibiting the enzyme hyaluronidase. It was suggested that phosphorylated hesperidin, by acting as an inhibitor of hyaluronidase, prevented the sperm from entering the ova. Further investigations failed to verify the claims made for this compound.

In India, Dr. S. N. Sanyal at the Calcutta Bacteriological Institute has been testing *m*-xylohydroquinone as an oral contraceptive for about the last 10 years. So far his results suggest that this compound taken twice a month, reduces the number of pregnancies to two-fifths the usual rate. The Western world has not been able to confirm Dr. Sanyal's results.

Furthest ahead with investigations on oral contraceptives is the U.S. G. D. Searle and Co., who have Enovid, which is 17 α -ethinyl-17-hydroxy-5(10)-estren-3-one (generic name norethynodrel) plus ethinyloestradiol 3-methyl ether; this steroid has been tested clinically on a large scale in Puerto Rico for nearly four years and is now under test in the U.S. Parke Davis, Ciba, Organon and Syntex in the U.S. sell under their respective trade names, 17 α -ethinyl-19-nortestosterone and Parke Davis have recently indicated that they are engaged in an extensive long-range research programme to evaluate the safety and efficacy of this steroid (trade name Norlutin) as a contraceptive. Besides trials in the U.S. the company has investigative studies under way in Mexico and Japan. Neither Enovid nor Norlutin are on sale in the U.S. as an oral contraceptive, since the Food and Drug Administrations has only approved the drugs for the treatment of menstrual and pregnancy disorders.

Chemically, both drugs are 19-nor steroids, which are structurally similar to the female sex hormone progesterone. *In vivo*, the two preparations, although administered orally, have basically the same biological action as progesterone, namely in preparing the uterus for pregnancy and in ensuring the maintenance of pregnancy and in inhibiting release of ova during pregnancy. It is this last action which suggests the use of 19-nor steroids as birth control drugs. Properly administered, the drugs do not generally

disturb the normal menstrual cycle while their resemblance to the natural hormone makes their effect compatible with normal functioning of the female body.

Discovery of the action of progesterone dates back to 1934 when it was discovered by Adolf Butenandt and co-workers in Germany. Later, Dr. Hans H. Inhoffen of Schering AG., Berlin, in 1938, synthesised 17- α -ethinyl-testosterone (ethisterone). Structurally this compound is identical with progesterone, except that the groups are attached to the 17-carbon, and it is active orally (progesterone is administered intramuscularly). In this country, the progestational drugs (natural and synthetic) are available from B.D.H., Ciba, Organon, Glaxo, Roussel, Pharmethicals, to mention some main suppliers of sex hormones. They are not practical for use as oral contraceptives because of the large dosages required. This is not to say that these hormones—progesterones (and oestrogens) have not been used as occasion demanded to control ovulation.

In the search for more active oral progestogens, Syntax SA in Mexico, specialising in steroid compounds discovered in 1951, 19-nor progesterone, four to eight times as active as progesterone and from this synthesised 17- α -ethinyl-19-nor testosterone (Norlutin). This work was directed by Dr. Djerassi. Today Norlutin is marketed by Parke Davis in the U.S., by Schering AG in Germany and Shionogi Co. in Japan. Searle's Enovid was synthesised in 1952 by Dr. Frank B. Colton and marketed in 1957.

Last year Dr. H. J. Ringold and co-workers of Syntex announced the synthesis of 6-dehydro-6-chloro-17 α -acetoxyprogesterone. Orally, this compound is reported to have 50 times the progestational activity of Norlutin. It is now being pharmacologically tested by Eli Lilly in the U.S. as a drug for the treatment of menstrual disorders, but Syntex believe it to be a promising oral contraceptive. A year earlier, Wm. S. Merrell Co., a division of Vick Chemical synthesised 1-(*p*-diethylaminoethoxyphenyl)-1-phenyl-2-*p*-methoxyphenyl ethanol (ethanoxitriptol) which is an oestrogen antagonist capable of preventing pregnancy in animals. Work at the Rockefeller Institute indicates that the compound prevents the fertilised ovum from being implanted in the uterus. Some limited trials with humans have been undertaken but the results are inconclusive.

Oral contraceptives at present studied thus control fertility by preventing ovulation, preventing the sperm uniting with the ovum or by preventing the fertilised ovum from being implanted. Other compounds, both steroidal and non-steroidal, are also under investigation for their ability to inhibit sperm development or mobility as, for instance, with testosterone, and the nitrofurans (the latter, however, give rise to serious side effects).

Chemical evidence available suggest that drugs such as the 19-nor steroids are safe oral contraceptives, and that even after five or up to 10 years of administration, child-bearing is possible.

Aside from the clinical studies and the long-term effects, if any, of oral contraceptives, there is, of course, the question of cost. Mr. Eley has said that the B.D.H. compound, which is a steroid, may cost about 1d a tablet; for the course of 20 days the cost would therefore be 1s 8d. The steroids Enovid and Norlutin sell at 55 cents for a 10 mg-tablet and the cost of a month's supply is estimated at \$11, although further trials suggest that a 5 mg. daily dose is effective for contraceptive purposes. Cost is obviously a very important factor with these drugs since their routine use would be prohibitive to peoples of countries such as India and Japan where there is the greatest need for simple contraception.

While many may look askance at oral contraception on

moral and religious grounds, the growing world population is causing concern. But there is a more worthwhile side to these studies in contraception, in that valuable fundamental research is being done at the same time

INTEREST IN FERRIC CHLORIDE

TWO U.K. companies are understood to have plans under study with regard to increasing facilities for production of ferric chloride; whether as the anhydrous or hydrate form is not known.

Uses of ferric chloride are various—as coagulant for sewage and industrial wastes, in glycerine manufacture, in etching copper in photo engraving, as a mordant, and to produce decorative surface effects on ceramics and in tile and brick-making. It also has uses as an oxidising, chlorinating and condensing agent, pigment and in medicine.

At least one market survey is known to have been conducted recently on behalf of one chemical company to gauge the potential outlets for ferric chloride and any market where increased usage of this chemical is likely.

The Water Research Association has been conducting studies on the use of ferric chloride in solution as a sludge coagulant. Another field where greater use of ferric chloride might be anticipated is in brick- and tile-making where this iron salt imparts a warm full colour to bricks, etc.

Another outlet for ferric chloride is in printed circuits for television; this is stated to be a growing market for the compound. But a field where there might be expected to be a reasonable and steady market for ferric chloride is in catalysis. Enquiries for ferric chloride for use as a catalyst have been received within recent months and it is believed that this is going to prove a likely outlet, for this iron salt has been used in polypropylene preparation as far back as 1955. Dow Chemical Co. in patent BP 765,054 indicated that solid polymers of propylene oxide may be made by heating the monomer in the presence of certain iron compounds as catalysts.

Price *et al.* (J.A.C.S., 1956, 78, 690) have also studied the polymerisation of inactive and active propylene oxide with two catalytically active systems, namely KOH as a crystalline suspension and ferric chloride as a soluble and as an insoluble complex. These workers found both catalysts gave amorphous, low melting atactic polymer whenever inactive monomer, i.e. equimolar mixture of D- and L-compound, was used. Soluble ferric chloride complexes, they recorded, gave inactive atactic polymer even if active monomer is fed into the polymerisation process.

HIGH PRESSURE POLYPROPYLENE

CURRENT aim of major plastics producers in the U.K., the U.S. and on the Continent is a process for production of high-pressure polypropylene. A recent report suggested that Badische Anilin-und Soda-Fabrik AG, Germany, had developed such a process. This company has certainly a high-pressure polythene process which gives a product of intermediate density, but that this process can be used for production of high-pressure polypropylene is not correct. This is not to say that B.A.S.F. are not working on a process to produce polypropylene by a high-pressure process. Imperial Chemical Industries in this country are understood to be actively engaged in research on this score as are Du Pont and Union Carbide in the U.S.

Reports on polypropylene have all along suggested that this is the next major plastics material. At the present time there is a large capacity available for high-pressure polythene, but polypropylene facilities are only just being set up. Hence if some of the high-pressure polythene plant capacity could be converted for polypropylene, large quantities of this new plastics could be produced at an earlier date than is now possible, while at the same time little capital expenditure would be required.

Project News

Simon-Carves to Design Polythene Plant

● SIMON-CARVES LTD. have been given an order for the design and supply of equipment for a high-pressure polythene plant for Petroleos Mexicanos, the national oil company of Mexico. The plant will be set up on a site near Mexico City. It will operate Imperial Chemical Industries' process, an appropriate agreement having been concluded between I.C.I. and Petroleos Mexicanos.

● HYGROTHERM ENGINEERING LTD., 115 Princess Street, Manchester, are to design and supply Hygrotherm vapour heating systems to two important new manufacturing installations of I.C.I. One is the polyurethanes plant, designed by Dyestuffs Division to be installed near Fleetwood, Lancs, and the other, a solvent plant, designed by General Chemicals Division to operate near Runcorn, Cheshire. In both cases the installation will employ the new I.C.I. diphenyl oxide diphenyl transfer medium known as Thermex.

● MEMBER of the Power Gas Group, P.G. Engineering, of Stockton-on-Tees, have received contracts for process plant from Canada and India valued at over £1½ million. The Canadian order awarded by Brockville Chemicals to P.G. Engineering and their associated company Power-Gas Canada, of Montreal, is for the complete design, construction and commissioning of a hydrogen plant at a new works now in the course of erection near Maitland, Ontario. The order, scheduled for completion early in 1961, is worth about \$1.8 million.

The other contract, received from Fertiliser and Chemicals, Travancore, South India, is for a Texaco partial oxidation gasification plant.

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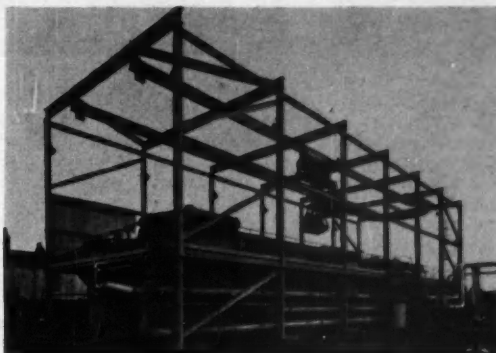
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disturb the normal menstrual cycle while their resemblance to the natural hormone makes their effect compatible with normal functioning of the female body.

Discovery of the action of progesterone dates back to 1934 when it was discovered by Adolf Butenandt and co-workers in Germany. Later, Dr. Hans H. Inhoffen of Schering AG., Berlin, in 1938, synthesised 17- α -ethinyl-testosterone (ethisterone). Structurally this compound is identical with progesterone, except that the groups are attached to the 17-carbon, and it is active orally (progesterone is administered intramuscularly). In this country, the progestational drugs (natural and synthetic) are available from B.D.H., Ciba, Organon, Glaxo, Roussel, Pharmethicals, to mention some main suppliers of sex hormones. They are not practical for use as oral contraceptives because of the large dosages required. This is not to say that these hormones—progesterones (and oestrogens) have not been used as occasion demanded to control ovulation.

In the search for more active oral progestogens, Syntex SA in Mexico, specialising in steroid compounds discovered in 1951, 19-nor progesterone, four to eight times as active as progesterone and from this synthesised 17- α -ethinyl-19-nor testosterone (Norlutin). This work was directed by Dr. Djerassi. Today Norlutin is marketed by Parke Davis in the U.S., by Schering AG in Germany and Shionogi Co. in Japan. Searle's Enovid was synthesised in 1952 by Dr. Frank B. Colton and marketed in 1957.

Last year Dr. H. J. Ringold and co-workers of Syntex announced the synthesis of 6-dehydro-6-chloro-17 α -acetoxyprogesterone. Orally, this compound is reported to have 50 times the progestational activity of Norlutin. It is now being pharmacologically tested by Eli Lilly in the U.S. as a drug for the treatment of menstrual disorders, but Syntex believe it to be a promising oral contraceptive. A year earlier, Wm. S. Merrell Co., a division of Vick Chemical synthesised 1-(*p*-diethylaminoethoxyphenyl)-1-phenyl-2-*p*-methoxyphenyl ethanol (ethanoxypiphetol) which is an oestrogen antagonist capable of preventing pregnancy in animals. Work at the Rockefeller Institute indicates that the compound prevents the fertilised ovum from being implanted in the uterus. Some limited trials with humans have been undertaken but the results are inconclusive.

Oral contraceptives at present studied thus control fertility by preventing ovulation, preventing the sperm uniting with the ovum or by preventing the fertilised ovum from being implanted. Other compounds, both steroidal and non-steroidal, are also under investigation for their ability to inhibit sperm development or mobility as, for instance, with testosterone, and the nitrofurans (the latter, however, give rise to serious side effects).

Chemical evidence available suggest that drugs such as the 19-nor steroids are safe oral contraceptives, and that even after five or up to 10 years of administration, child-bearing is possible.

Aside from the clinical studies and the long-term effects, if any, of oral contraceptives, there is, of course, the question of cost. Mr. Eley has said that the B.D.H. compound, which is a steroid, may cost about 1d a tablet; for the course of 20 days the cost would therefore be 1s 8d. The steroids Enovid and Norlutin sell at 55 cents for a 10 mg-tablet and the cost of a month's supply is estimated at \$11, although further trials suggest that a 5 mg. daily dose is effective for contraceptive purposes. Cost is obviously a very important factor with these drugs since their routine use would be prohibitive to peoples of countries such as India and Japan where there is the greatest need for simple contraception.

While many may look askance at oral contraception on

moral and religious grounds, the growing world population is causing concern. But there is a more worthwhile side to these studies in contraception, in that valuable fundamental research is being done at the same time

INTEREST IN FERRIC CHLORIDE

TWO U.K. companies are understood to have plans under study with regard to increasing facilities for production of ferric chloride; whether as the anhydrous or hydrate form is not known.

Uses of ferric chloride are various—as coagulant for sewage and industrial wastes, in glycerine manufacture, in etching copper in photo engraving, as a mordant, and to produce decorative surface effects on ceramics and in tile and brick-making. It also has uses as an oxidising, chlorinating and condensing agent, pigment and in medicine.

At least one market survey is known to have been conducted recently on behalf of one chemical company to gauge the potential outlets for ferric chloride and any market where increased usage of this chemical is likely.

The Water Research Association has been conducting studies on the use of ferric chloride in solution as a sludge coagulant. Another field where greater use of ferric chloride might be anticipated is in brick- and tile-making where this iron salt imparts a warm full colour to bricks, etc.

Another outlet for ferric chloride is in printed circuits for television; this is stated to be a growing market for the compound. But a field where there might be expected to be a reasonable and steady market for ferric chloride is in catalysis. Enquiries for ferric chloride for use as a catalyst have been received within recent months and it is believed that this is going to prove a likely outlet, for this iron salt has been used in polypropylene preparation as far back as 1955. Dow Chemical Co. in patent BP 765,054 indicated that solid polymers of propylene oxide may be made by heating the monomer in the presence of certain iron compounds as catalysts.

Price *et al.* (J.A.C.S., 1956, 78, 690) have also studied the polymerisation of inactive and active propylene oxide with two catalytically active systems, namely KOH as a crystalline suspension and ferric chloride as a soluble and as an insoluble complex. These workers found both catalysts gave amorphous, low melting atactic polymer whenever inactive monomer, i.e. equimolar mixture of D- and L-compound, was used. Soluble ferric chloride complexes, they recorded, gave inactive atactic polymer even if active monomer is fed into the polymerisation process.

HIGH PRESSURE POLYPROPYLENE

CURRENT aim of major plastics producers in the U.K., the U.S. and on the Continent is a process for production of high-pressure polypropylene. A recent report suggested that Badische Anilin-und Soda-Fabrik AG, Germany, had developed such a process. This company has certainly a high-pressure polythene process which gives a product of intermediate density, but that this process can be used for production of high-pressure polypropylene is not correct. This is not to say that B.A.S.F. are not working on a process to produce polypropylene by a high-pressure process. Imperial Chemical Industries in this country are understood to be actively engaged in research on this score as are Du Pont and Union Carbide in the U.S.

Reports on polypropylene have all along suggested that this is the next major plastics material. At the present time there is a large capacity available for high-pressure polythene, but polypropylene facilities are only just being set up. Hence if some of the high-pressure polythene plant capacity could be converted for polypropylene, large quantities of this new plastics could be produced at an earlier date than is now possible, while at the same time little capital expenditure would be required.

Project News

Simon-Carves to Design Polythene Plant

● SIMON-CARVES LTD. have been given an order for the design and supply of equipment for a high-pressure polythene plant for Petroleos Mexicanos, the national oil company of Mexico. The plant will be set up on a site near Mexico City. It will operate Imperial Chemical Industries' process, an appropriate agreement having been concluded between I.C.I. and Petroleos Mexicanos.

● HYGROTHERM ENGINEERING LTD., 115 Princess Street, Manchester, are to design and supply Hygroturm vapour heating systems to two important new manufacturing installations of I.C.I. One is the polyurethanes plant, designed by Dyestuffs Division to be installed near Fleetwood, Lancs, and the other, a solvent plant, designed by General Chemicals Division to operate near Runcorn, Cheshire. In both cases the installation will employ the new I.C.I. diphenyl oxide diphenyl transfer medium known as Thermex.

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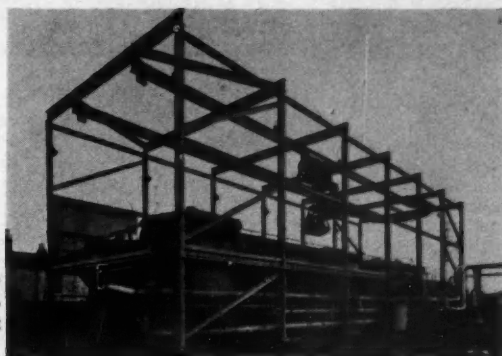
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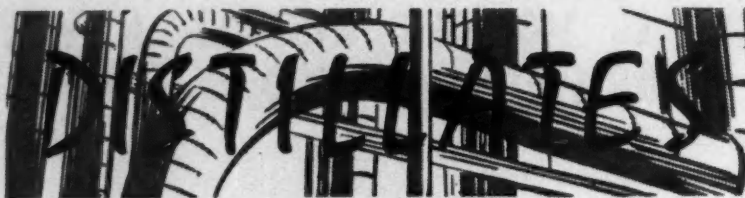
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★ **STRONG** criticism of the Monopolies Commission's report on fertilisers came recently from Mr. J. Lythgoe, chairman of Adam Lythgoe Ltd., when he opened plant at Frairton, Perth, for the production of 15,000 tons a year of a new M.C.F. fertilisers. He did not agree with the finding that a monopoly could exist without operating against the public interest.

He had to buy his raw materials from his two biggest competitors because of monopoly or go to the Continent. In the latter case, imports are covered by a tariff of £4 a ton. Raw material costs throughout the world, Mr. Lythgoe says, have fallen so far below British costs that he had bought all his semi-raw materials this year from Europe, if he could buy freely in world markets, the costs of his fertilisers would be that much lower.

Monopoly stands for concentration of power in a limited number of hands responsible only to themselves. He believes the remaining 'rump' of independent fertiliser producers could adapt to changing conditions, always provided that they were not swamped by the combined weight of monopoly capital or hostile Government policy. Mr. Lythgoe suggests that the Government should appoint a senior officer to examine the remaining independent producers and that there should be relief in the nature of lower tariffs on imported raw materials.

★ Now in commission at Badische Anilin- and Soda Fabrik is a major plant for the production of ethylene and other olefins. I learn that the fluid-bed technique, developed by Fritz Winkler at B.A.S.F. in the 1920's and which has since been extended to many fields of chemistry, has been applied in a modified form to the olefin process.

Liquid petroleum is introduced into a fluid bed in which petroleum coke, formed during the process, represents the vortical material. The reaction can be regulated to result in practically no residue of coke.

Apart from olefins, aromatic hydrocarbons are produced on a lesser scale, as well as a fraction that is reintroduced into the process and which, with oxygen, supplies the energy needed for cracking the petroleum; process steam is supplied by waste heat. This process is said to eliminate soot and other unwanted by-products and residues.

B.A.S.F. tell me that besides the cracking process, there is also a gasification process which supplies carbon monoxide and hydrogen. Separation of the gaseous components in the split gas takes place in a low-temperature separation plant. After their conversion, CO and H are

used as synthesis gas for producing primary products such as ammonia and methanol. Hence the new process fits well into the B.A.S.F. production programme.

★ **CHEMICAL** manufacturers do not despatch large or small cargoes of materials to the docks without adequate description etched on the containers; but are all exporters (i.e. merchant firms) equally punctilious in this respect?—and should the industry do more to help both stevedores and captains of merchant ships?

According to Mr. R. T. Clarke, superintendent stevedore of Alfred Holt and Co. (Blue Funnel Line), who recently spoke to the Merseyside Branch of the Institute of Packaging, many modern chemicals cause headaches at dockside, and result in much "thumbing through the Blue Book" to decide how best to meet Ministry of Transport regulations for dangerous cargoes.

★ **THE** largest single pipeline protection project ever carried out, the encasing of a 1,616-mile section of the Texas-to-Florida, U.S., natural gas pipeline in a polythene sheath to protect the line from corrosion, is almost complete. Use of the polythene tape, manufactured from a compound produced by Union Carbide, saved the Houston Texas Gas and Oil Corporation, more than \$500 a mile over the conventional protective coatings such as tar, or more than \$800,000 for the 1,616-mile section.

Because the tape coating is waterproof, it provides protection from corrosion by oxidation. It is also a good electrical insulator which helps protect the pipe from galvanic corrosion. This type of corrosion is further prevented by applying a slight opposing electrical potential across the pipeline; the excellent insulating quantities of polythene reduce the potential required to protect the line against galvanic corrosion.

★ **FIRST** number of *News and Review* published by A. Gallenkamp and Co. Ltd., Sun Street, London E.C.2, who recently acquired J. W. Towers and Co. Ltd., Widnes, gives news that the company plans to build a new head office and showrooms, within a 'stone's throw' of Sun Street. The project, now being planned in detail with a view to building being started in 1960, would provide enlarged technical and development laboratories and instrument workshops. The site, bounded by Clifton, Christopher and Earl Streets, London E.C.2, is now used as a car park.

Also included are details of the Gallenkamp-Towers sales and distribution ser-

vice, together with a new sales policy which was introduced on 1 February. Plans for co-ordination of supplies of the two companies are well advanced, the target for completion being April-May when both companies will use a common general catalogue.

Rising demand has led to the introduction of quantity discounts on Gallenkamp and Towers apparatus and instruments, ranging from 2½% less for orders for three of an item to 10% less for orders for 12 of an item. For their trade marked scientific glassware, the discounts range from 2½% less for orders of £50 or over to 10% less for orders of £400 or over.

★ **THE** fact that modern chemical industry is based almost entirely on knowledge obtained by scientific research is the reason for I.C.I.'s employment of a staff of more than 4,000 on research, for the company's encouragement of pure research in universities and for its employment of scientifically trained people throughout the company in a wide variety of jobs.

Taking I.C.I. as a whole, about 50% of their research and development spending (almost £13 million in 1959) is devoted to increasing efficiency of the divisions' existing processes, and in undertaking new productions. About 15% is devoted to a search for new products; and about 20% on research to discover the best way to make new products on a large scale. The remainder goes on background research to provide basic data for manufacturing processes.

These figures were given by Dr. John Ferguson, the company's research director for the past three years, in an interview published under the title 'Pattern of Research' in the current issue of *The I.C.I. Magazine*.

★ **DEVELOPMENT** of a new value of the atomic weight of silver in the U.S. results from a highly accurate determination of the absolute isotopic abundance ratio of silver using mass spectrometry techniques. The new value, obtained by the U.S. National Bureau of Standards in conjunction with the Atomic Energy Commission, is 107.8731 ± 0.0018 on the chemical scale and 107.9028 ± 0.0011 on the physical scale.

This work was part of a broad programme aimed at obtaining more accurate values of fundamental constants in order to meet demands for more precise measurements.

While the discovery could lead to changes in the present list of atomic weights it will have little or no effect on the practical applications of physics or chemistry in the foreseeable future.

★ **THE** Fisons bid for British Drug Houses prompts the following irrelevancy:

Fisons, the masters of fertility,
Woo B.D.H., who seek sterility.
If they unite, as some believe,
The final issue, I can't conceive.

Alembic

In Parliament

33 $\frac{1}{3}$ % Tariff Replaces Import Control on Synthetic Dyestuffs

THE Commons on Tuesday unanimously approved an Order which imposes an import duty of 33 $\frac{1}{3}$ % *ad valorem* on synthetic organic dyestuffs.

The Minister of State, Board of Trade, Mr. F. J. Erroll, said that the Dyestuffs Acts, under which imports were first prohibited remained on the Statute Book, although they had not been used since 1939. Clause 5 of the European Free Trade Association Bill repealed those Acts to clear the way for introduction of the tariff, and the Order completed the changeover to a tariff regime by providing for the imposition of the necessary import duty.

At the same time, the control of the imports of those goods had been lifted by an amendment to the open general import licence. The Order was thus a necessary step in the changeover from a system of protection by prohibition and licence to a system of protection by tariff for an important British industry.

In reply to questions, Mr. Erroll, said the Order applied the same tariff to dyestuffs as was applied to most other chemicals. They had what amounted virtually to a complete prohibition of imports of dyestuffs previously, except where a case could be made out. There was relatively little relaxation of control of imports of dyestuffs until the Order came into effect, and there would be a tariff instead of complete prohibition. Nevertheless it was possible to make out a case for dyestuffs to be imported when comparable dyestuffs were not available in the U.K. and dyestuffs imported under those arrangements amounted to £5 million worth a year. In the case of the E.F.T.A. countries tariff protection would be progressively reduced so that there would be no tariff protection against dyestuffs and chemical imports from members of the E.F.T.A. at the end of a period of 10 years.

He added that the chemical industry had realised that the changeover was necessary and had co-operated in the changeover.

B.o.T. Discussions on Potash Supplies

The President of the Board was asked in Parliament last week "by what date he expects to be able to embark upon, and complete, his consultations with the chemical fertiliser industry on the implementation of the recommendations relating to the monopoly of potash contained in the recent report of the Monopolies Commission?"

Meetings with U.K. interests concerned, it was stated in reply, began last week, and "the Monopolies Commission's recommendations will be one of the subjects for discussion." It was not possible to forecast how long the discussions would take. In the discussions "with

Fisons, I.C.I. and others, we shall discuss further measures to utilise to the full the buying and bargaining power of the United Kingdom."

Minister Details Fertiliser Subsidies

Amount per ton and the percentage of price of fertiliser subsidies on the fertilisers listed in appendix 3 of the Report of the Monopolies Commission on the Supply of Chemical Fertilisers were recently given, as below, in a written answer to a question in the House of Commons, by the Minister of Agriculture.

Fertiliser Subsidy 1959-60 (1 July, 1959—30 June, 1960) Amount per Ton and Percentage of Price

	Amount per ton		% of price
	£	s. d.	%
Nitrogenous straight fertilisers			
Sulphate of ammonia (21% N) ...	9	19 6	46.9
Nitro-Chalk (15.5% N) ...	7	7 3	39.8
Sodium Nitrate (16% N) ...	7	12 0	29.0
Phosphatic straight fertilisers			
Single superphosphate (18% P ₂ O ₅) ...	6	15 0	46.8
Triple superphosphate (47% P ₂ O ₅) ...	17	12 6	45.5
Ground rock phosphate (29% P ₂ O ₅) ...	5	16 0	52.3
	(see Note 3)		(see Note 3)
Basic slag (14% P ₂ O ₅) ...	3	3 6	43.6
Basic slag (17% P ₂ O ₅) ...	3	13 0	43.1
Basic slag in N. Ireland only (18% P ₂ O ₅) ...	5	3 0	45.5
Basic slag in N. Ireland only (21% P ₂ O ₅) ...	5	19 6	46.0
Compounds containing nitrogen and phosphoric acid			
I.C.I.'s C.C.F. No. 1A (12% N, 12% P ₂ O ₅ , 18% K ₂ O) ...	10	3 4	32.0
Fison's No. 31 (9% N, 9% P ₂ O ₅ , 15% K ₂ O) ...	7	10 9	29.6
Fison's No. 35 (5% N, 12.5% P ₂ O ₅ , 12.5% K ₂ O) ...	(No longer quoted)		

Notes

1. Percentages are based on Spring prices (which take effect 1 March, 1960) for 6 ton lots, delivered to buyer's nearest station.
2. The nitrogen content of sulphate of ammonia was raised from 20.8 to 21% from 1 July, 1959.
3. Subsidy payments are restricted to 50% of delivered price under provisions of the Agriculture (Fertilisers) Act, 1952.

No Proposal for Low Carbonisation Plant

In response to a question, "What decision has been reached with regard to approval of the installation of a low carbonisation plant in the Central East Area of the Scottish Division of the National Coal Board?" it was stated on behalf of the Minister of Power that no proposal of this kind had been received.

Water Industry and Toxic Sprays

One of the questions to be examined by the group investigating the use of toxic sprays in agriculture will be the possible effect on water supplies and need for further research, stated Mr. Hare, Minister of Agriculture, in answer to a recent question in the House. However, since the group is composed "entirely of scientists, who do not represent any particular interest" it would not be appropriate for an industry (in this context, "the water industry") to be represented on the group.

Chemical Imports from China

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Applications for licences to import chemicals from China under arrangements contained in Notice to Importers 921 amounted to about £450,000, said Mr. F. J. Erroll, Minister of State, Board of Trade, in response to a recent question in Parliament. Closing date for such applications, he went on, was 30 November 1959, and licences were issued to most applicants on 18 December, but a few late applications "are still being considered."

Actual imports (from China) in 1958, it was stated, were about £180,000 and the quota for 1960 is "about £350,000" so it is "obviously possible to accommodate most applications."

Fluoroacetamide Remains on Poisons Schedule

FLUOROACETAMIDE and Gusathion [S-(3,4-dihydro-4-oxobenzol[1,2,3]triazin-3-yl) methyl OO-dimethyl phosphorothioate] should remain in the Agriculture (Poisonous Substances) Regulations as a Second Schedule Part II substance, state the Ministry of Agriculture in a communication dated February 1960. Use of the materials on a non-edible crop is acceptable (i.e. on a crop not intended for human or animal consumption).

Maximum rate and frequency of Gusathion applications per crop per season are described for some fruits, and protection of livestock, game birds and bees is detailed.

The communication, available from the Ministry, 5-8 St. Andrews Place, Regent's Park, London N.W.1, deals with safety regulations applicable to use of Part II substances.

Imported Dyestuffs To Be Licence Free

Licences are no longer required to import dyes, dyestuffs and intermediates from the Dollar Area, the Relaxation Area, or from Japan, states a Board of Trade Notice to Importers dated 3 March. A change should be made in the Summary of Import Licensing Regulations published in Notice to Importers 910 (amended by 920); by deleting the item relating to such materials in Part I of the First Schedule issued by the Board of Trade, Tariff and Import Policy Division, Horse Guards Avenue, London S.W.1.

The Government of U.K. Technical Colleges

An appraisal of the government of technical colleges in the U.K. is given in a new booklet issued by the joint F.B.I.—Technical Colleges Committee under the auspices of the F.B.I. Education Committee, in the light of industry's rapidly growing needs for trained technical and commercial staff. Entitled 'The Technical Colleges and their Government', one booklet is obtainable from the Federation of British Industries, 21 Tothill Street, London S.W.1.

FISONS RAISE BID FOR B.D.H. TO £8 MILLION

FISONS' offer for the issued ordinary capital of British Drug Houses Ltd. has been raised from £7.4 million to about £8 million (11 £1 ordinary shares in Fisons for every 20 ordinary 5s units of B.D.H.). There is no change in the cash consideration which will remain at £2 10s for every 20 ordinary B.D.H. units. Nor is there any change in the terms of the offer for the B.D.H. preference stock, which remains at six Fisons 4½% cumulative preference £1 shares plus 5s cash for every five £1 5½% cumulative preference.

The Fisons' offer closed on 9 March.

The improved offer was made in view of information not previously available regarding the increased profits of B.D.H. for 1959 and taking into account the B.D.H. dividend forecast for that year. The Fisons' statement says that although B.D.H. profits are estimated to have increased by only about 9%, the B.D.H. board has forecast a doubled ordinary dividend of 24% for 1959, but in so doing they have reduced the dividend cover to something over 1½ on the basis of the unaudited results for 1959. The B.D.H. board hopes to maintain this rate for the year 1960, which is equivalent to £6 gross for each 100 ordinary units. The improved Fisons' offer maintains an annual income of £6 gross for each 100 units on the basis of dividends totalling 10% on Fisons' ordinary capital. The Fisons' dividend in 1960, however, is expected to be twice covered and the comparison takes no account of any future increases in Fisons' dividend.

Growth of Fisons' Pharmaceutical Trade

Fisons' existing business in the field covered by B.D.H.—namely pharmaceuticals, laboratory supplies and fine chemicals—has grown rapidly, the Fisons' statement confirms and is now "roughly comparable in size with the B.D.H. business and is much more profitable". The addition of the B.D.H. business should result in operating economies, increased efficiency and greater competitive strength, the company adds. "By accepting the Fisons' offer B.D.H. ordinary stockholders will be taking an interest in a much larger, rapidly expanding and diversified business."

Chairman of British Drug Houses, Mr. Geoffrey Eley, has stated that the revised terms "do not—in my view or in that of my board—justify us in departing from our original recommendation that shareholders should not part with their B.D.H. stock". He added that there was an important piece of additional information about the research activities of B.D.H. which would be announced. Later, news that B.D.H. had discovered

an oral contraceptive product was released.

Commenting on this announcement, Sir Clavering Fison, chairman of Fisons, said that there might be "a feeling on the part of B.D.H. shareholders and others that we had some prior information about this product and that our interest in acquiring B.D.H. stems from that fact. I wish to say that this is not so". Nor,

he added, would such information have influenced any decision one way or another. "We have had too much experience of failure of promising new discoveries". He claimed that if the new product were good, then Fisons were better equipped than B.D.H. to develop and market it.

Sir Clavering said he thought it might be of interest to B.D.H. shareholders to know that in June to December 1959, the profits from Fisons' chemical companies were rather more than double those of the corresponding months in the previous year. In the year ended 30 June 1959, profits from the chemical division were £500,000 higher compared with the previous year.

L. S. Smith Sign Process Exchange Agreement With J. Meissner

UNDER a newly reached agreement of co-operation between J. Meissner, Cologne and Leonard Smith (Engineers) Ltd., Abford House, Wilton Road, London S.W.1, each company will support the other throughout the world in the sale of their formaldehyde processes.

Leonard Smith (Engineers) Ltd. will represent J. Meissner in Britain for the sale of processes, which include the production of hexamine, pentaerythritol, nitrating plants, nitrotoluenes, nitroglycerine and similar products, RDX, PETN, azides. To this may be added the production of explosive powders, detonators, primers, fuses. In this field,

planning of buildings and safety measures is an essential part of the service.

Where necessary or desirable, the services of Leonard Smith (Engineers) Ltd. will be included for engineering, procurement and erection in Britain. The two companies will also co-operate on schemes outside the above range.

Most of the Meissner processes are designed for continuous production and very considerable facilities exist, including pilot plants for further development. Established over 30 years ago in the field of explosives, Meissner's have developed considerably in the sphere of chemical engineering and are well known throughout the world.

M. & B.'s New Research Institute

BUILDING work on a new research institute at Dagenham, Essex, is now nearing completion and May and Baker Ltd. expect these buildings to be equipped and operational by autumn.

The M. and B. Research Institute will comprise a chemical wing, a central building housing a library, lecture theatre and administrative offices, and the biological wing with ancillary buildings. The new research institute will

enable existing units from various laboratories in the Dagenham works to be brought together in one coherent group. At the same time it will provide additional facilities for M. and B. scientists working on expanded research programmes. Close liaison with the present agricultural and veterinary research station at Ongar will be continued, and further development on this field research station will take place.



Completed biological wing of the new Research Institute

O.C.C.A. TECHNICAL EXHIBITION

New Chemicals and Development Products Previewed

A WIDE range of new and improved chemicals for the paint and surface coatings industry is to be shown next week at the twelfth Technical Exhibition of the London Section, Oil and Colour Chemists' Association. Visitors will also be able to learn of current progress in research and development work.

Many of these developments are summarised in this special 'Chemical Age' preview of the exhibition, which is being held at the Royal Horticultural Society's New Hall, London S.W.1, on 15 March (3 p.m. to 7.30 p.m.) and 16 and 17 March (10 a.m. to 7.30 p.m.). Admission is free.

Base Acronal LR1042

Allied Colloids Ltd., 2 The Green, Richmond, Surrey, will show a selection of the BASF paint raw materials and in particular polyester resins, and pigments and dyestuffs generally.

In the polyesters field, the standard wax-requiring Palatal P6 and the so-called "glossy" resin, Palatal L100, will be shown in both clear and pigmented finishes, and also the newly developed Paliogen range of vat-type pigments. These are stated to have exceptional light fastness and tinctorial strength. Other well-known BASF pigments and dyestuffs will be exhibited.

Additional exhibits will cover emulsion paints, with particular reference to Acronal LR1042, a new acrylic copolymer, and metal primers based on Plastopal BT, an internally plasticised urea resin having good water resistance, and, Emu Powder 120 FD, a styrene copolymer for water-based anticorrosive systems which can be used for paintwork. (Stand 5.)

Surfactants for Paints

Previously Hess Products Ltd. and Armour and Co. Ltd. exhibited on separate stands the Distec range of fatty acids and hardened oils and the Armour range of nitrogen derivatives of fatty acids.

As a result of the amalgamation in 1959 Armour Hess Chemicals Ltd., 4 Chiswell Street, London E.C.1, was formed and at this year's exhibition the Distec range and the Armour chemical derivatives will be featured on the same stand.

Distec products to be shown will be 90/95% purity lauric acid (Distec A103) and hardened castor oil (Distec HG271). Both these are for the alkyd resin trade for good colour non-drying alkyd plasticisers. The nitrogen derivatives form a comprehensive range of cationic, nonionic and amphoteric chemicals, all of which are finding increasing application in surface coatings, etc. (Stand 74.)

Corrosion Inhibition with Calcium Plumbate

Main feature of the exhibits of Associated Lead Manufacturers Ltd., Clements

House, 14-18 Gresham Street, London E.C.2, describes the use of Caldiox calcium plumbate in formulating paints for application by brushing, spraying, dipping and stoving, with particular reference to the formulation of rust-inhibiting paints and paints for direct application to zinc surfaces, including new galvanising.

Practical demonstrations will show corrosion and its inhibition by Caldiox calcium plumbate, and its adhesion to zinc surfaces. Lead pigments, e.g., white lead, red lead, and antimony pigments with particular reference to the use of Timonox antimony oxide in flame-retardant paints will also be exhibited. (Stand 80.)

Developments in Solventless Coatings

Work has recently been carried out by Bakelite Ltd., 12-18 Grosvenor Gardens, London S.W.1, on development of solventless coatings, and this will be the main feature of this company's exhibit.

Interest has centred around use of a solventless liquid epoxide resin hardener system where it is possible for the user, by addition of a filler, to provide a coating up to 0.015 in. thick in one application. Films harden overnight under normal ambient conditions, but hardening continues for several days after application. A range of pigments and colour may be used. Drainage of thick films on vertical surfaces has been minimised and flow-out is excellent. The coating system is normally applied by brush but other methods of application, e.g., roller coating, curtain coating or doctor blade may be possible. Laboratory tests indicate that this system is likely to be suitable for protection of many substrates, particularly metal and concrete, and it may also find use as a trowelled-on resistant floor coating. (Stand 42.)

Baldwin Photometric Instruments

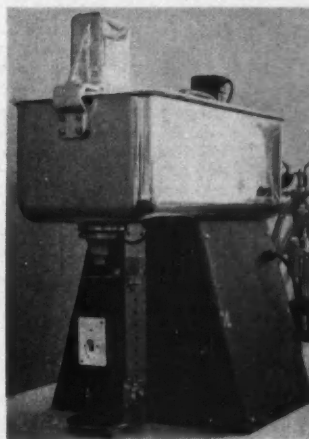
Photometric instruments designed for the measurement or comparison of colour will be shown at work by Baldwin Instrument Controls Ltd., Dartford, Kent.

Designed for measurement of turbidity and colours of paints, liquids and varnishes, etc., in a continuous process by comparison with a standard is the Baldwin Comparator Densitometer. As a mill balance indicator, this instrument is stated to detect differences of about 1 p.p.m. and filters are fitted to enable the user to measure colours.

For comparing quantitatively the reflectivity of surfaces against reflectivity of standard specimens over the whole or part of the visible or near U.V. spectrum there is the Baldwin Colormat type S. Using magnesium oxide or carbonite as 100% reflectivity, it is claimed to perform this comparison to an accuracy within $\pm 0.1\%$. (Stand 75.)

Filling Machines

A small range of filling machines which would apply to the oil and colour industry will be exhibited by Albro-Fillers and Engineering Co. Ltd., Wharf Road, Ponders End, Middlesex. Among these will be the 'Albro' No. 3 type gravity weight-operated filler for deposit-



Time-controlled volumetric filler

ing oils, spirits and paints into tins up to one gallon in capacity. Other machines to be shown will be a time-controlled volumetric filler specially designed for filling liquids into containers irrespective of the tare weight of the container. A single head vacuum operated powder filler deposits powder dustlessly into tins, bottles, cardboard drums, etc. (Stand 6.)

Resins for Water-Thinned Stoving Paints

Resins for water-thinned stoving paints will be exhibited by Beck, Koller and Co. (England) Ltd., Beckacite House, Edwards Lane, Speke, Liverpool 24. The company's American associates, Reichold Chemicals Inc., have introduced two classes of material for this purpose: Synthemuls aqueous emulsions of alkyd resins; Super-Beckamine 3560, a water-soluble melamine resin, compatible with the Synthemuls. The coatings will cure at conventional stoving schedules. Examples of primers and gloss finishes will also be shown. Further work on Beckosol 3020, the trimethylolpropane alkyd, includes its use with nitrocellulose in clear and pigmented finishes.

Two new thixotropic alkyds will be included; Beckogel 1486, used in the pro-

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duction of jellied gloss paints, and may be used as the sole medium, or as a structuring agent for gloss paints in general, and Beckogel 1481, a high gel-strength alkyd in white spirit. (Stand 33.)

Bentone in Gas Chromatographic Analysis

Versatile Bentone gelling agents will again be the main feature on the stand of **F. W. Berk and Co. Ltd.**, Berk House, Portman Square, London W.1, and information on the new Bentone 27, specially designed for the more polar systems e.g., epoxies, vinyls, polyurethanes and plastisols, will be available.

Use of Bentone 34 as a possible stationary phase for the analysis of crude benzoles by gas chromatography will be discussed. Separation of *m*- and *p*-xylene has been readily achieved Berk report.

Also to be exhibited is a series of panels, after 1,000 hours of salt spray and humidity, illustrating M-50 anti-corrosive pigment (basic lead silico chromate) versus iron oxide in water-based primers based on various media becoming available. (Stand 46.)

Urea/epoxy Co-condensate

Recent developments in amino and alkyd resins for industrial stoving enamels will be featured by **BIP Chemicals Ltd.**, Oldbury, Birmingham. These developments include a urea/epoxy co-condensate which can be used alone or in combination with oil modified alkyd resins.

A semi-drying oil-modified trimethylol propane alkyd which in combination with urea and melamine resins produces finishes having improved water, alkali and detergent resistance will be displayed and an improved acid catalysed urea and melamine based woodfinishes will be shown, together with exposure panels illustrating the exterior durability of these types of lacquers.

More recent improvements in urea and melamine resins etherified with iso-butyl alcohol will be exhibited. A working technical exhibit will be the A.S.T.M. arc resistance apparatus. (Stand 79.)

Alpex Isoomerised Rubber

A new grade of Alpex isomerised rubber will be exhibited by **Fredk. Boehm Ltd.**, 19 Bentinck Street, London W.1, in conjunction with **Chemische Werke Albert**, Wiesbaden, Germany. The grade RS.2088 has been specially developed for use in letterpress inks and eliminates hitherto inherent disadvantages of these rubbers for this type of printing.

A new grade of Pioneer M.20 will be shown, a hard maleic resin for which is claimed exceptional nitro-cellulose compatibility, which should prove of interest for wood finishing. (Stand 74.)

Vibro-Energy Mill

Exhibited for the first time by **William Bolton Ltd.**, Providence Engineering Works, Burslem, Stoke-on-Trent, will be the Podmore Boulton laboratory Vibro-

energy mill, with results of investigation and development work carried out on this new method of grinding.

Also shown will be the Boulton gyratory strainer and separating unit, suitable for wet or dry processing, and the company's standard range of products, including Boulton ball and pebble mills, mixing and blending equipment and filter presses. Clients will be invited to visit the works. (Stand 15.)

Cellulose Esters in Emulsion Paints

Exhibits from **British Celanese Ltd.**, Celanese House, Hanover Square, London W.1, will illustrate work on three aspects of use of water-soluble cellulose esters in emulsion paints: (1) Tests to determine connection between viscosity stability of paints and degree of substitution of S.C.M.C. used; (2) work on tropical stability of emulsion paint; and (3) co-polymers and water sensitivity; S.C.M.C. and M.C. in relation to insolubilising the thickener. (Stand 16.)

New Paint Additive

Main theme of the exhibits by **British Oil and Cake Mills Ltd.**, 2 Kingscote Street, London E.C.4, will be Synthawax, which is designed for use as a paint additive for introducing body and suspending heavy pigments, as well as for the modification of alkyd resins and lubricating greases. The standard material is available in flake form, but a new powder form with increased dispersive properties is being developed, particularly for use as a paint additive.

Recent developments in the use of Trokene, the film-forming material derived from fatty acids and having a novel structure which is entirely free from ester linkages, will be indicated. These developments include the use of Trokene with various hard resins. (Stand 58.)

B.O.C.'s Vandike Resin Emulsions

Some of the results of a further year's work on the applications and uses of their range of Vandike synthetic resin emulsions for paint manufacture will be displayed by **British Oxygen Chemicals Ltd.**, 24 Grafton Street, London W.1.

Central theme of the exhibit this year will be the study of the effect on certain paint properties of variations in pigmentation. Both pigment volume concentration and plasticiser will be varied over a wide range and the effect of coalescing agents will also be shown.

Basic resins used for the exhibit will be a series of vinyl acetate copolymers of varying degrees of internal plasticiser. (Stand 66.)

New Polyester and Water Soluble Resins

Several new resins will be shown by **British Resin Products Ltd.**, Devonshire House, Piccadilly, London W.1, and special prominence will be given to

advances in the amino resin field. These will be demonstrated in a display featuring a fast-curing urea resin and a triazene resin possessing exceptional gloss retention. There will be a comprehensive display showing the versatility of the vinyl toluenated long oil alkyd resin, Epok A.1620/75. The suitability of this material for quick drying industrial and decorative finishes is emphasised.

Two new Epok polyester surface coating resins will also be exhibited. These resins, one wax-free and other wax-containing, have been developed to produce a brilliant film which is mar proof and possesses high build.

An extensive programme of research in B.R.P.'s Barry Laboratories is in hand to develop a series of water-soluble resins which will be of considerable interest to the industry. One of these resins and its applications will be featured on the stand. (Stand 61.)

Design of a Weathering Station

Subject of this year's exhibit by **British Titan Products Ltd.**, 10 Stratton Street, London W.1, will be the design of a weathering station. Every paint manufacturer has had the problem of setting up an exposure testing station, but not many have had the opportunity to start on a completely new site, to build a special laboratory for controlling tests and to equip it with the best equipment that can be bought at a reasonable price. British Titan have been able to do this after more than 20 years of exposure testing and their new station at Carlton is the result.

Layout of the station, the design and method of construction of the exposure racks, the instruments that have been installed for recording weather conditions and for evaluating the behaviour of the materials on test will be shown. (Stand 53.)

Epoxy Plasticisers for Novel Nitrocellulose Lacquer System

The combined stand of **Rex Campbell and Co. Ltd.** and **The Chemical Supply Co. Ltd.**, 7 Idol Lane, Eastcheap, London E.C.3, will display a range of cadmium reds and yellows which are economical in use yet retain all the expected characteristics of this class of pigment such as heat and light resistance, brightness and chemical resistance which make them ideally suited for use in both paints and plastics.

Cuprous oxide is the principal toxic ingredient of all marine anti-fouling paints but hitherto this pigment has had poor stability in the dry powder state. As a result of a new production plant using a modified process a grade is now offered with much superior keeping qualities and easy dispersibility.

Among the number of new alkyd resins is a pure drying oil modified resin suitable for either air-drying or baking which has a touch-dry time of 5-10 minutes and a solvent resistance superior to styrenated alkyds.

Epoxy Plasticiser R.C.I. can be used in a novel nitrocellulose lacquer system where it is cross-linked into the film by the addition of a catalyst. The result is

stated to be both clear wood finishes and pigmented lacquers which have improved adhesion, greater flexibility and exceptional solvent resistance. Also of interest to lacquer manufacturers is di-iso-decyl phthalate plasticiser now available for the first time. It has very useful non-migratory and low volatility characteristics. (Stand 10.)

Low Odour, Low Aromatic Hydrocarbon Fractions

Demand for increasingly pure hydrocarbon solvents and diluents continues to rise steadily and to meet it **Carless, Capel and Leonard Ltd.**, Hope Chemical Works, Hackney Wick, London E.9, have improved their existing plant and installed additional new modern batch distillation units and a plant for preparation of a high grade of crude tar.

An infra-red spectrophotometer used in conjunction with a two-column vapour phase chromatographic apparatus will be exhibited and a demonstration will show how these instruments are used to control the production plant and to assist in producing materials that meet the exacting demands of modern industry. Large scale graphs will be exhibited to show by means of aromatic content and distillation range the relationship of one product to another.

For some time there has been a demand for low odour, low aromatic hydrocarbons and **Carless, Capel and Leonard** intend to show that these are now available in a wide range of fractions. These products are finding an increasing use in domestic preparations of chemically dried products now available for special purposes. A concentrate providing a commercial source of methyl cyclopentadiene will be featured. This is believed to have interesting possibilities. (Stand 76.)

Araldite Solvent-Free Stoppers

Examples of the wide range of Araldite epoxy resins for surface coatings and anti-corrosive purposes will be displayed by **Ciba (A.R.L.) Ltd.**, Duxford, Cambridge. Araldite 820-RH is a two part formulation consisting of a resin and a hardener, and has been specially developed to form the base of cold curing finishes or, alternatively, of finishes that cure rapidly at elevated temperatures. For hot-cured finishes there are Araldite 985-E and 961-A, and for use in the preparation of clear or pigmented stoppers which cure in a short time with negligible shrinkage there is Araldite 880-AB, supplied as two viscous solvent-free solutions. (Stand 38.)

Hard Resins by Cole

Latest developments in their range of hard resins, including maleics, phenols, cresols and 100% phenolics will be exhibited by **R. H. Cole and Company Ltd.**, 2 Caxton Street, London S.W.1. Latest advances in terpene resins will be included, particularly their use in conjunction with other materials, such as polythene.

Development of hydrocarbon resins, including BX terpene resins and Piccopale petroleum resins in various forms

of emulsion for incorporation in emulsion paints in conjunction with vinyl acetate and other polymers will be covered and the latest trends in the uses of monomeric styrene and styrene polymer resins will be shown, together with modern developments in Statite mill balls and lining blocks for ball mills. (Stand 65.)

50-Gall Dualmix Dispersion Mixer

A new small triple roll mill, the **Cox Pilot**, which has been designed for laboratory and small batch work, will be demonstrated by **Cox's Machinery Ltd.**, Victoria Terrace, St. Philip's Marsh, Bristol 2. The pilot has hydraulically controlled rolls, which are 12 in. long by 5 in. diameter, and it occupies very little space.

On view will be the Dualmix 50-gall. high speed change pan mixer. This has been designed and constructed to meet present-day demands, i.e. not only to mix but to disperse completely the material in process. The head is elevated and lowered by hydraulic jacks, and is amply powered with suitable gearing to give two-speed mixing to the central agitator and side scrapers. With the head sliding on two steel columns and the base shaped to locate and positively lock the container, the latter is completely sealed for mixing. The pan is machined internally, allowing scrapers maximum use, thereby ensuring such complete mixing that the dispersion is sufficiently complete not to require any other processing. (Stand 43.)

New Isophthalic Alkyd

Main feature of the exhibit of **Cray Valley Products Ltd.**, St. Mary Cray, Orpington, Kent, will be the Resydrol water-soluble resins, now being produced in the U.K. under a licensing agreement with Dr. Herbert Hönel's company, Vianova Kunstharz A.G., Vienna, and in co-operation with A.B. Wilhelm Becker, Stockholm.

The Resydrol systems provide stoving finishes which are entirely thinnable with water and exhibits will show the commercial development of such systems, while laboratory examples of the wider variety of finishes which can be so produced will also be included.

One-coat brushing decorative finishes are becoming increasingly popular, and a series of tests demonstrating improvements to conventional systems through introduction of thixotropy will be shown. This series will include the new isophthalic alkyd, Synolac 20W, and a new and highly versatile thixotropic alkyd. (Stand 69.)

Calcium Carbonates Extenders and Fillers

Extenders and fillers for paints which consist of calcium carbonates in various forms, carrying the name OMYA and developed by the OMYA organisation, Pluess-Staler AG, Oftringen, Switzerland, will be featured by **Croxton and Garry**

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Ltd., 16-18 High Street, Kingston-on-Thames, Surrey. These materials are prepared, particle size selected and, in some cases, coated for specific applications.

There are two main groups—the amorphous and the crystalline types. The amorphous types are as follows: **Micromya**—a champagne whiting of a high degree of purity (98.5% calcium carbonate) and of particle size range 1-3 microns; **OMYA BSH**—basically the same material as **Micromya**, but carrying a hydrophobic coating of approximately 1%; and **OMYA BSH 30**—as the above, but carrying a hydrophobic coating of 3%.

The crystalline types are known as **OMYA BLP** of which there are three grades. These are crystalline calcites of particle size range 1-8 microns and which have a high degree of whiteness enabling them to replace the proportion of expensive pigments such as titanium dioxide or lithopone. (Stand 1.)

Polimul Emulsions for Steelwork Protection

Uses of **Polimul** emulsions in the paint, adhesive, leather and textile industries will be the main feature of **Compositions Department, Dunlop Rubber Co. Ltd.**, Chester Road Factory, Erdington, Birmingham 24. Division will show how their range of emulsions can be of great assistance to these industries. Another exhibit will show the use of **Polimul** emulsions in the protection of steelwork in industrial plant. Steel panels coated with a zinc-rich primer based on a **Polimul** copolymer medium will emphasise the durability of these emulsions.

Two of the test methods used by **Dunlop** in the manufacture of their emulsions are being demonstrated. The first of these, vapour phase chromatography, is a rapid and sensitive method for the detection of impurities in organic liquids and its application to the assessment of the purity of vinyl acetate monomer will be shown. In this test the chromatograph was a dinonyl phthalate-brick stationary phase, with a catheterometer indicator. In the polymerised emulsion the residual monomer content is frequently important and the second test shows how, by means of accurate technique, the monomer is first isolated and then determined volumetrically. (Stand 41.)

Ultra-Micro Pipettes with Coloured Graduations

H. J. Elliott Ltd., E-MIL Works, Treforest Industrial Estate, Pontypridd, Glamorgan, will exhibit, in addition to a comprehensive range of E-Mil laboratory glassware, hydrometers, thermometers and viscometers of particular interest to oil and colour chemists. Most of these will incorporate the new E-Mil **Treamic** permanent filled and etched graduations.

New exhibits will include the improved range of E-Mil rapid dispensers which deliver rapidly and automatically pre-

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selected volumes from 1 to 50 ml. and a range of E-Mil ultra-micro pipettes with Treamic fillings. This Treamic process makes permanent the colour fillings in etched graduations, as used under normal conditions. (Stand 12.)

Esso Butadiene Copolymers for Industrial Lacquers

Central theme by **Esso Petroleum Co. Ltd.**, 36 Queen Anne's Gate, London S.W.1, will be the exhibition of new types of hydrocarbon polymer resins having varied applications in surface coating compositions. These resins, designated Bruton, are butadiene copolymers in a range of grades with various degrees of unsaturation and properties suitable for many uses. They are "particularly useful for production of industrial lacquers giving glossy, tough films having excellent water, chemical and impact resistance, as well as flexibility". These lacquers are suitable for internal coating of food and beer cans and, when pigmented, as primer coatings for equipment. (Stand 27.)

Variable Angle Gloss Head

- A range of 'EEL' photoelectric instruments will be exhibited by **Evans Electroselenium Ltd.**, St. Andrews Works, Colchester Road, Halstead, Essex. These units have already been widely employed in the paint and allied trades to assist in product finishing, and include the 'EEL' reflectance spectrophotometer, Reflectometer Mark III, gloss heads, sedimentometer and spherical haze meter.

The 'EEL' variable angle gloss head is considered likely to arouse considerable interest, since it has been designed to meet the requirements of those who wish to measure gloss at other angles in addition to the normal 45° angle of incidence. Operating in conjunction with the 'EEL' Unigalvo type 20, a versatile galvanometer unit on which readings are indicated, this instrument enables measurements to be obtained at continuously variable angles in the range 15°-85°. (Stand 71.)

New Alkyd Resins Developed by Bayer

In addition to the well-known dehydrated castor oil types, Alkydal R 35 has been developed by **Farbenfabriken Bayer A.G.**, Leverkusen, W. Germany,

which is a short-oil dehydrated castor oil type stated to have improved viscosity stability without reduction of surface hardness and possessing very good pigment binding properties besides good adhesion, good flexibility and remarkable colour retention. It yields the desired high-gloss film of great body in stoving finishes as well as in forced drying finishes (80°C).

For stoving finishes and for nitrocellulose combination finishes, Alkydal E 26 (arachis oil modified) and Alkydal C 25 (coconut oil modified) have newly been added to the Bayer range. The stoving finishes produced from these two products are reported to be free from light and dark yellowing and in connection with melamine or urea formaldehyde resins they show remarkable viscosity stability.

Desmodur L is now also available. Bayer report, as a 67% solution in ethyl glycol acetate/xylene (1:1), with a flash point higher than 30°C, so that both polyurethane coatings of a higher flash point as well as favourable formulations for application by brushing can be produced. Further progress has been made in the production of a non-yellowing isocyanate. (Stand 50.)

Aqueous Dispersions

Technical developments displayed by the **Geigy Co. Ltd.**, Rhodes Middleton, Manchester, include aqueous dispersions for emulsion paints, particularly with regard to the Irgalite SPV colours; developments in the Geigy range of phthalocyanine colours and their advantages will be indicated and following the display in 1959 of pigments suitable for stoving finishes there are now further recommendations for newer types of paint media.

Information will be presented on Geigy's newer plasticisers covering their use in plastisols and in conventional paints; on bactericides and fungicides for paints and on the use of DDT in insecticidal paints. (Stand 59.)

Spun and Micronised Pigments

Emphasis will be placed by **Golden Valley Colours Ltd.**, Wick, Bristol, on new developments in their range of spun and micronised pigments and their use. It is hoped to demonstrate potentialities of supra red, maroon and black oxides;

and the company's range of chromes, chrome greens, hansa yellows, toluidine toners, etc., will be shown. (Stand 11.)

Pliolite Bases and Resins Introduced by Goodyear

Being introduced for the first time in this country at the Exhibition are Pliolite S-5 bases and Pliolite resins developed by **The Goodyear Tyre and Rubber Co. (Gt. Britain) Ltd.**, Bushbury, Wolverhampton, Staffs. These bases, developed for easier incorporation into paints, are available in resin-pigmented mixtures of 19 types. The resins, dry-ground with heavy duty equipment in combination with many and various pigments used by the paint industry, need not be processed with conventional grinding equipment, but may be dispersed in solutions with various modifiers, drying oils or plasticisers to produce very high gloss enamels.

Goodyear have also developed a special resin for use in solvating with white spirits or any combination of solvents having a KB value of over 40. This resin is Pliolite VT extensively used for road traffic markings and reflective stripes since it has resistance to the effects of vehicle traffic and weather, excellent bead resistance, quick-drying time plus ease of application, and may be used on bituminous surfaces where low solvency power is required, and resistance to oil and chemicals. (Stand 77.)

Non-Ionic Water-Soluble Cellulose Ether

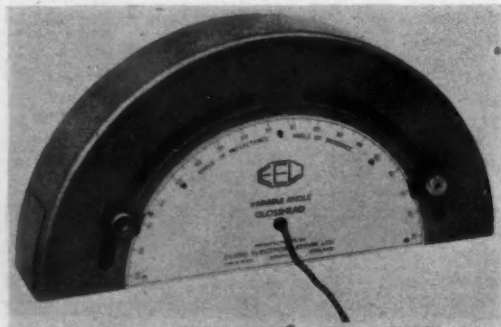
During the past year, **Hercules Powder Co. Ltd.**, 1 Great Cumberland Place, London W.1, have made "a number of notable advances in the field of industrial chemistry", and the stand will consist of three sections. In the first, a new development in cellulose chemistry, Natrosol 250, which is a new non-ionic water-soluble cellulose ether specifically designed for emulsion polymerisation reactions. It is stated to be particularly suitable as a thickener and suspending agent for emulsion paints and to represent an advance on the types of water-soluble derivatives currently in use.

In the second section details of the formulation and performance of new alkyd resins based on tall oil fatty acids and their derivatives will be featured.

In the third, developments in plasticiser chemistry. Recent additions to the Hercoflex range of plasticisers, together with some new plasticising resins for lacquers and p.v.c. compounds, will form the basis for this section. (Stand 57.)

Polyethers and Nitroparaffins

Honeywill-Atlas Limited, Devonshire House, Mayfair Place, Piccadilly, London W.1, have not been present at this exhibition for some time, since their new derivatives have not been of particular interest to the surface coating industry. Now they will be presenting Atlas G.2410 and related polyethers, a series of polyfunctional polyethers developed specifically for use in the preparation of various types of polyurethanes. Renex non-ionic detergents, a versatile and low cost range



EEL variable-angle gloss head

of non-ionic surface active agents of interest in the formulation of paint cleaners and strippers.

Honeywill and Stein Ltd., address as above, will be showing samples and technical literature illustrating the solvent properties of the nitroparaffins. The physical properties of these solvents render them useful alternatives to other materials in their class such as ketones and esters.

In the U.S. it is reported that 2-nitropropane "has become the preferred material for use as a solvent in coatings; except in a few cases where the special advantages of one of the other three outweigh the higher cost". Main advantages of the nitroparaffins are said to be greater solvent power for many natural and synthetic resins and polymers, less odour, high flash point, the production of formulations having low viscosities and greater chemical resistance, and better solvent release from the coating.

Information will also be available relating to the wide range of chemical derivatives based on nitroparaffins for use in the surface coating industries, with special reference to 2-amino-2-methyl-1-propanol. (Stand 49.)

Raw Materials Techniques

A considerable proportion of the research programme of **Hygrotherm Engineering Ltd.**, 3 Fitzhardinge Street, Portman Square, London W1, is concerned with development of chemical engineering techniques in manufacture of raw materials for the surface coatings and plastics industries, especially synthetic resins, polyesters and plasticisers.

This year's exhibit will be concerned mainly with advances in the field of mains-frequency induction heating applied to stainless steel clad reaction vessels and glass-lined steel reaction vessels. Reference will be made to test facilities provided by the company which are of value to overseas manufacturers.

Improvements have been effected in the company's range of indirect heating systems employing hydrocarbon oils, diphenyl/diphenyl oxide and organo-silicate liquids as heat transfer media, and information can be obtained on the latest equipment available and on methods of automatic plant control. (Stand 73.)

I.C.I.'s New Pigments and Intermediates

Imperial Chemical Industries Ltd., Imperial Chemical House, Millbank, London S.W.1, are represented at the Exhibition by four divisions—Dyestuffs, Nobel, Heavy Organic Chemicals, and General Chemicals.

'I.C.I. Pigments and Resins for Industrial Finishes' will be the theme of Dyestuffs Division's display. Three new pigments—Monolite Maroon GS, Monolite Fast Yellow FRS, and Chromastral Red RS—are being shown for the first time.

Silicone resins for heat-resistant paints and silicone primers and top coats for emulsions and cement paints will be featured by Nobel Division. Also on show will be trimethylol propane, a trihydric alcohol used for preparing short-oil alkyd resins for stoving enamels, and

neopentyl glycol, a di-hydric alcohol for preparing esters and polyester resins and plasticisers.

Propylene glycol, dipropylene glycol, dimethylterephthalate, cumylphenol, trimellitic anhydride and Thermex are among the products included in Heavy Organic Chemicals Division's exhibits. Cumylphenol, now made for the first time in Britain by I.C.I., is said to be an excellent intermediate for the manufacture of phenolic surface coatings, possessing exceptional chemical resistance. Trimellitic anhydride, a highly reactive new raw material, is of special interest for the manufacture of water soluble and oil soluble alkyd resins.

Alloprene chlorinated rubber is featured by General Chemicals Division, and test panels show the performance of paints based on this compound under a variety of outdoor weathering and accelerated tests, and its resistance to chemical attack. (Stand 56.)

Zinc and Barium Pigments and Extenders

Zinc and barium pigments and extenders are to be featured by **Imperial Smelting Corporation Ltd.**, 37 Dover Street, London W.1. Zinc sulphide pigments with improved exterior durability are being shown as development products and their properties illustrated by means of electron-micrographs and exposure test panels; and some effects of changes in the pigmentation level of zinc sulphide pigments on paint behaviour will be demonstrated, particularly with respect to hiding power.

Displays will illustrate the uses of zinc tetroxychromate and zinc dust in priming paints for metals and other substrates. (Stand 36.)

Filter Aids and Fillers

Johns-Manville Co. Ltd., 20 Albert Embankment, London S.E.11, will again focus attention on 'the many advantages derived from the use of Celite filter-aids and fillers.' Each Celite grade, conforming to strict specification, 'ensures sharp clarity allied to maximum output for any particular filtration'. An expanded Perlite filter-aid intended as a supplement to the Celite range, is introduced this year.

Details are available on Calflo synthetic calcium silicates with a millimicron particle size range, and further developments have taken place in the Chromosorb line of Celite aggregates for use in gas chromatography. Additional grades are available to the analytical chemist. (Stand 44.)

Johnson Matthey's Titanate Yellow

In addition to the well-known Matthey cadmium yellow and red colours, a new yellow pigment will be featured by **Johnson, Matthey and Co. Ltd.**, 78-83 Hatton Garden, London E.C.1. This will be marketed under the name of Matthey

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Titanate Yellow and it will be shown in stoving lacquer, in thermoplastics and in other media.

This new pigment is reported to be highly resistant to heat, light, moisture and chemical reagents, and to have exceptional opacity and a pleasing lemon colour in full shade. It is very stable in dispersions in titanium dioxide, and is therefore of particular value where very pale yellow and cream colours are required. It is known that cadmium lemons when widely extended with titanium dioxide to produce pale tints will suffer colour loss in certain conditions, and it is expected that Matthey Titanate Yellow will effectively fill this gap in the yellow inorganic pigment range. (Stand 62.)

New Pin Disc Pulverisers Developed by Kek

Three of the latest additions to the range of Kek pin disc pulverisers will be exhibited by **Kek Ltd.**, Palmerston Street, Ancoats, Manchester, 12.

The first, the smallest, of these machines is the latest version of the Minikek. The mill, which is intended for laboratory, pilot plant or small production work, may now be driven at higher speeds than was hitherto possible. As a result of this improvement in design particle sizes equivalent to the smallest obtainable from production mills may now be achieved with the Minikek.

The other pulverisers to be exhibited are the Model 3B2 and Model H3 Kek mills. Both machines are belt-driven from 15 H.P. motors and in consequence show the high output per horse power and low temperature rise figures now associated with this drive. Whereas the Model 3B2 resembles an orthodox Kek mill, the Model H3, however, is arranged with the grinding discs in the vertical plane in order to facilitate washing out when soluble materials are to be reduced. (Stand 9.)

Laporte Introduce Titanium Nickel Yellow

Their wide range of organic and inorganic peroxygen compounds for polymerisation initiation in the surface coating, paint and allied trades will be featured by **Laporte Chemicals Ltd.**, Kingsway, Luton, Beds. An analysis method for organic peroxygen compounds using an automatic titrimeter will be demonstrated by **Laporte Titanium Ltd.**, Hanover House, 14 Hanover Square, London W.1.

A new yellow pigment is to be introduced. This pigment is a titanium nickel yellow which has a strong self-colour with remarkable opacity and excellent stability to heat, light and chemicals. In addition to having a rutile structure it is reported to have the high durability and chalk resistant properties of the rutile titanium oxide pigments.

This company will also detail a treated anatase titanium oxide, Tiona TD, which is of particular interest where excellent after-yellowing properties are desired.

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e.g. in plastics and in paints and in some textiles, and the use of titanium esters in adhesion promoters will be treated more fully. (Stand 30.)

Reaction Vessel Equipment

This year **Metal Propellers Ltd.**, 74 Purley Way, Croydon, will again be showing items of processing plant embodying new developments in design, principal exhibit of which will be a 150-gallon stainless steel reaction vessel fitted with a spiral coil jacket, also in stainless steel, suitable for steam heating at a working pressure of 150 p.s.i.

The coil gives "greatly improved heat transfer conditions" as compared with a conventional one-piece jacket, more accurate temperature control; and can be made in two or more separate circuits to facilitate heating of small batches. This type of jacket is equally suitable for high pressure steam, hot oil, or other transfer fluids and can be used for cooling purposes as well as heating.

New information will be available on plant developments of particular value for distillation of fatty acids and other heat-sensitive products. (Stand 32.)

Mica for Surface Coatings

Research has continued by **Micafine Ltd.**, Raynes Way, Derby on the utilisation of mica in surface coatings and in the development of surface treated micas. Apart from other possibilities of advantageous utilisation mica has been found to have special properties in sealers.

The wider range of synthetic resins now available as aqueous dispersions has broadened the choice considerably, and the selected medium may be very usefully reinforced by the addition of mica.

The discovery of the beneficial results of the surface treatment of mica on its dispersion in oleo-resinous media has been further investigated in respect of improvements in grinding and of the influence of such treated mica on other properties. In particular, the effect of surface-treated mica on pigment settling and redispersion, and on the anti-corrosive properties of red lead and calcium plumbate primers has been examined, and these results will be illustrated. (Stand 34.)

Mixing Equipment

As specialists on fluid agitating and mixing equipment for paint, oils, colours, chemicals, etc., **L. A. Mitchell Ltd.**, Harvester House, 37 Peter Street, Manchester 2, will be exhibiting units from their range, including a new flame-proof mixer with a shaft adjustable in length, suitable for the paint and varnish industries, particularly where solvents are handled. They will also include laboratory machines mounted on a supporting base for standing on a laboratory bench, and laboratory roller mills for mixing or grinding purposes.

As representative for the **Sparkler Manufacturing Co. of America** specialising in a wide range of filtering equipment for varnish, resins, oils, lacquers,

chemicals, colours, etc., the company will be showing units from the range of Sparkler filters, including the horizontal-plate type with patented scavenger plate. Details will also be available of synthetic resin distillation plants, laboratory, pilot scale and large works installations. (Stand 28.)

Vinyl Acrylic Copolymer Emulsion

Basic research and technical development in the increasing trend towards water-based paint and coating systems have been continued by Resin Division, **National Adhesives Ltd.**, Slough, Bucks. Work to date with vinyl copolymers has been centred on the conventional decorative field where National Adhesives claim they can show major increases in both quality and versatility of emulsion paints. They are making claims for even greater versatility with a completely new vinyl acrylic copolymer emulsion. This latest addition to their range is reported to be fully compatible with zinc oxide and to have remarkable water-resistance.

There is also a new copolymer dispersion of .05 micron particle size. It is claimed to be of high water-resistance (although easily removable with mild alkali) and of a transparent high gloss. Among the uses forecast for it is as a base for dry-bright floor and maintenance polishes. (Stand 31.)

N.C.B.'s High-gravity Coal Tar Naphthas

Main feature of the exhibit of the **National Coal Board**, Hobart House, Grosvenor Place, London S.W.1, is the board's development of its range of high gravity coal tar naphthas, characterised by their high solvency powers and high flash points, for the surface coating and other industries.

Production of coal tar naphthas has been increased and in addition to naphthas to the N.B.A. Specifications Nos. 13A, 14A, and 15A, special close cut fractions produced to buyers' individual requirements will be displayed.

Two viscometers will be on the stand, together with samples of different qualities of xyloles and naphthas. The viscometers will be used to demonstrate the difference in viscosities of mixtures of high and low gravity solvents mixed with resins, and also their comparative solvencies. (Stand 78.)

Surface-Coating Products

Development of the products of **Novadel Ltd.**, St. Ann's Crescent, Wandsworth, London S.W.18, for the surface coatings industry and their applications in surface coating polyesters, nitrocellulose and p.v.c./p.v.a. lacquers, p.v.a. emulsion paints, etc., will be the theme of this exhibit.

Organic peroxide catalysts for a great variety of polymerisation processes have been increased in number and the properties and applications of the newer ones will be demonstrated.

Stabilisers are exemplified by a range of lead compounds and the Estabex

series of barium-cadmium compounds and epoxidised vegetable oil plasticiser/stabilisers.

Results of further work on development of Synouryn (dehydrated castor oil) and its fatty acid will also be featured. (Stand 37.)

Laboratory Dispersion Mills

Laboratory dispersion mills by **Pascall Engineering Co. Ltd.**, Gatwick Road, Crawley, Sussex, for the paint, oil and colour industry this year will incorporate latest modifications in design and development No. 2 triple roll mill and the No. 6 ball mill will again be on view, both featuring the up-to-date improvements in design and finish.

A laboratory unit of interest to oil chemists is the new centrifugal sample divider for division of seeds. This divider is "a real time-saver for dividing samples for laboratory tests". The action is extremely fast and a test batch can be divided within seconds and further subdivisions can be taken in rapid succession until the required sample quantity is obtained." (Stand 45.)

Latest Methacrylate Polymers

Plastic Products Ltd., 2 Caxton Street, London S.W.1, will exhibit in conjunction with R. H. Cole Ltd. the recent trends in vinyl acetate emulsions for emulsion paints and adhesives. The latest types of methacrylate polymers and polymer solutions will also be shown, including butyl, ethyl and methyl methacrylates and copolymers. (Stand 65.)

Vinyl-modified Alkyd Resins

Plastanol Ltd., Crabtree Manor Way, Belvedere, Kent will this year be exhibiting the Plastylol range of vinyl-modified alkyd resins and the Uecryl and Solucryl range of acrylic resin emulsions and solutions. The acrylic resins are being marketed in conjunction with Union Chimique Belge.

Plastylol S-30X, a styrene-modified alkyd resin, and Plastylols T-35W and T-45X, both vinyl toluene-modified resins will be shown. (Stand 68.)

Vegetable Oils

Featured by **Premier Oil and Cake Mills Ltd.**, Stoneferry, Hull, will be crude and refined vegetable oils used in the paint, printing ink and allied industries—in conjunction with their associated companies—Universal Oil Co. Ltd., and John L. Seaton and Co. Ltd.

Particular attention will be drawn to the range of soya oils covering crude de-gummed (lecithin 0.5% max.), pale and extra pale alkali refined oils. The range of blown castor oils of viscosities covering 28, 50, 250 poises at 25°C will also receive special prominence. In addition, processed oils and distilled fatty acids from the following will be mentioned:—linseed oil, soya oil, castor oil, palm kernel oil. (Stand 2.)

Industrial Oleochemicals

This year, the exhibit from **Price's (Bromborough) Ltd.**, Bromborough Pool, New Ferry, Near Birkenhead, will be devoted to showing some of the work carried out over the past year by their

Laboratory and Development Department. A wide variety of products derived from fatty acids and fatty alcohols will illustrate the company's interest in developing new products in the field of industrial oleochemicals. A number of the materials to be shown are already being used in developmental work by research organisations and various industries. Some exhibits may be of interest to the surface coating and allied industries.

In demonstrating the type of development work being carried out, the company are endeavouring to encourage contact with those potentially interested in derivatives of fatty acids and fatty alcohols for their own research projects. (Stand 4.)

Equipment by REL

Research Equipment (London) Ltd., 64 Wellington Road, Hampton Hill, Middx. will exhibit their standard range of equipment. This includes a humidity cabinet, power operated scratch test apparatus, salt spray cabinets, hard drying time test apparatus, film spreader (shim type), flow cups type 'A' and type 'B', fire retardance apparatus, fire resistance apparatus, assessment of sheen, hardness rocker and stand, single head abrasion test apparatus, multi-head abrasion and scrub resistance apparatus, and a junior sulphur dioxide cabinet. (Stand 17.)

Texicryl Emulsions

Recent developments and improved techniques with particular reference to the Texicryl range of acrylic polymer and copolymer range of emulsions, will be featured by **Scott Bader and Co. Ltd.**, Wollaston, Wellingborough, Northants.

Particular emphasis will be placed on water-based metal coatings, where coated panels prepared using various binders for the coatings will be exhibited.

Examples of the versatility of adhesives produced by the company will be shown and also emulsion polishes. (Stand 23.)

Formvar Wire Coating

Versatility of Formvar for magnet wire will be demonstrated by **Shawinigan Ltd.**, Marlow House, Lloyd's Avenue, London E.C.3. Object of the display will be to show that Formvar still holds its own in modern developments. In particular, in the growing demand for solderable wires the low temperature of solder desired can be maintained by the inclusion of Formvar which, of course, at the same time improves the abrasion, flexibility and heat shock of the coating which has been used for this purpose. (Stand 21.)

Instrument for Testing Surface Coatings

Sheen Instruments (Sales) Ltd., 15/16 Sheendale Road, Richmond, Surrey, will again be demonstrating their selection of instruments for testing surface coatings. The theme will be the company's policy of providing a range of instruments for each particular class of testing.

For the two important fields of gloss and viscosity measurement 10 pieces of apparatus can be seen.

The other items on show will include film applicators, fineness of grind gauges, scratch testers, hardness rockers and colourmeters, etc. Two new instruments will be displayed, the Autothinner and Parallel Plate Plastometer. (Stand 47.)

Shell Surface Coatings

The stand of **Shell Chemical Co. Ltd.**, Marlborough House, 15/17 Gt. Marlborough Street, London W.1, will feature the versatility of Epikote resin-based coatings, and exhibits will show how this property has allowed developments of systems and applications.

The company's range of ketones, alcohols, glycol ethers and hydrocarbons provides "complete coverage of solvents for the surface-coating industry by which high performance standards at attractive costs can be achieved for widely varying types of finishes". Demonstrations will be given of applications, and propylene glycol and sample resins will be featured. (Stand 60.)

Milling and Mixing Equipment

Participating in the exhibition for the first time will be **Silverston Machines (Sales) Ltd.**, 55/57 Tower Bridge Road, London S.E.1, who will be showing the Silverston immersion ball mill, a high-speed multi-purpose mixer emulsifier and high-speed laboratory mixer.

The ball mill is designed on a new principle to produce fine suspensions of insoluble solids in a liquid base, converting completely untreated raw materials into "a smooth finished product in one vessel and in a fraction of the time required by older processes".

The mixer emulsifier with a variety of interchangeable heads is used for homogenising, pumping, chopping and disintegrating to produce stable emulsions and suspensions, while the laboratory mixer is basically a scale model of the mixer emulsifier. Also shown will be the company's mixer miller Roto-shear, for integration of fibrous and resinous materials. (Stand 25.)

Metallic Lead Primers

'Spelthorne goes to sea' will be the exhibition theme of **Spelthorne Metals Ltd.**, Batchworth Wharf, Rickmansworth, Herts, and will highlight advantages of metallic lead primers in the specialised field of corrosion.

Exhibits will demonstrate improved protection with the material "at lower cost than with any other anticorrosive pigment", and examples of various materials such as polythene, rubber, glass-fibre laminate, etc., loaded with metallic lead will be displayed, together with other uses such as soundproofing and shielding against radiation. (Stand 13.)

S.E.P.C. Research on Shellac

A powerful adhesive developed from shellac at the laboratory of the **Shellac Export Promotion Council** which can be suitably tailored for different purposes will be demonstrated at the Council's

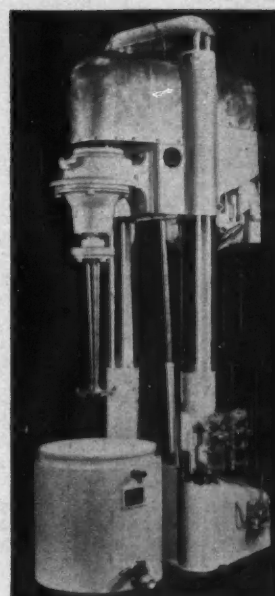
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stand. Other researches on modifications of lac with rosin, fatty acids, cashew shell oil, etc., will be indicated, together with the new avenues of applications. Some of these are: emulsion paints and enamels, water-resistant and alcohol-resistant anti-corrosive coatings, leakproof, waterproof, oil- and acid-proof coatings for hessian, paper and cotton as packing materials, laminated boards and wax polishes.

Lactones of some component hydroxy acids of lac, states the Council, can be converted into expensive perfume. (Stand 19.)

Super Rapid Disperser

Highlight of the stand of **Steele and Cowlshaw Ltd.**, Cooper Street, Hanley, Stoke-on-Trent, will be the new super rapid disperser, which has many appli-



Super rapid disperser

cations in the field of dispersion and solution of solids in liquids, especially where finely divided solids are required to be rapidly dispersed in viscous solutions of resins, varnishes, lacquers and numerous other coating materials. The disperser is designed to combine the advantages of high power with a high-speed impeller. The impeller can be easily cleaned when changing from one colour to another. The machine is designed for use with moveable containers with capacities of from 25 to 150 gallons.

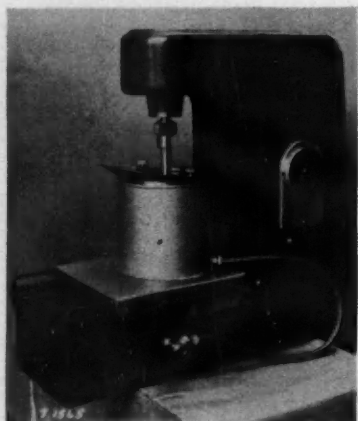
A small capacity mill, the Mark I, designed for either laboratory work or production work where relatively small quantities are required will be shown. It is designed to process materials of low or high specific gravity and is offered as a 1 h.p. or 3 h.p. machine depending on the weight per c.c. of material to be processed. The mill is fitted with four interchangeable pots, thus enabling different materials to be processed simultaneously. The pots can be supplied in stainless

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steel, mild steel or hard porcelain. (Stand 22.)

Pilot-scale Attritor

The 1-S Attritor—a pilot production model which is a handy bench type but which is of sufficient size to reproduce production conditions of the larger



Model 1-S attritor

machines, and the 15-S one of a size which is useful for the rapid processing of intermediate and smaller production quantities will be featured by **Torrance and Sons Ltd.**, Bitton, near Bristol.

During the past year high speed cavitation mixers have been developed still further. These mixers are available in a wide range from fractional horse power up to 45/50 h.p. Variable speed is also incorporated in certain units (such as the one to be displayed) and mixers can be supplied with adjustable clamps for supporting over containers. Main uses to which these mixers can be put are dispersing, cold cutting, pre-mixing for ball mills, triple roll mills, etc., thinning, tinting, and blending. (Stand 20.)

New Union Carbide Chemicals

One of the main features of the exhibit of Chemicals Division, **Union Carbide Ltd.**, 103 Mount Street, London W.1, will concern the new plant at Hythe which is coming on-stream during the first quarter of this year. This plant will convert ethylene into ethylene oxide by direct oxidation, and thence into a range of derivatives including mono-, di-, and tri-ethylene glycols, Carbowax polyethylene glycols, ethanalamines, Cello-solve and Carbitol glycol ethers, and Tergitol nonionic surface active agents. Annual production of these ethylene oxide derivatives will be initially of the order of 45 million lb.

New developments to be seen on this stand are organic acids, C_6-C_{10} , in particular, 2-ethyl hexoic acid for use in paint driers. This acid forms heavy metal soaps of improved solubility in drying oil formulations.

A special, 99% grade of Cellosolve acetate has been developed for use as a solvent for polyurethane resins and a

new polyol, 1:2:6-hexanetriol, reacts with dibasic acids to make alkyd resins that form softer and more distensible films than alkyds based on glycerol, and 1:2:6-hexane triol is stated to be an excellent softener and conditioning agent for animal glues, caseins, and other water soluble resins.

Two new intermediates for epoxide resins are now available. Vinyl cyclohexane dioxide (Epoxide-206) has a low viscosity approaching that of water, and it is used as a reactive diluent for epoxy resins. Dicyclopentadiene dioxide (Epoxide-207) produces plastics capable of withstanding temperatures in excess of 300°C. (Stand 18.)

Vapour-Phase Chromatography

The Universal Oil Co. Ltd., Stoneferry, Hull, will show further developments in vapour phase chromatography with particular emphasis on the analysis of drying and semi-drying fatty acids.

In conjunction with their associated companies—**Premier Oil and Cake Mills Ltd.** and **John L. Seaton and Co. Ltd.**, who will feature glyceride oils, the whole range of oleines, stearines, fatty acids, glycerine and pitch manufactured by this company will be mentioned. Particular reference will be made to distilled fatty acids for synthetic resins, such as distilled linseed oil fatty acids, distilled linseed acid oil fatty acids, distilled sunflower fatty acids, and distilled dehydrated castor oil fatty acids. (Stand 2.)

Bulk Production of Tung Oil Fatty Acids Esters

Samples of the methyl esters of tung oil fatty acids, bulk production of which has recently been started by **Victor Wolf Ltd.**, Victoria Works, Croft Street, Clayton, Manchester 11, will be exhibited. The main field of application of these esters is the production of tung oil-modified alkyd resins and of tung oil fatty acids-epoxide resin esters. The use of tung oil and also of tung oil fatty acids in the preparation of the above products frequently leads to serious gelations of the reaction mixture. Experience has shown that this danger can be avoided, state Victor Wolf, if methyl esters of tung oil fatty acids are used instead. In addition, the esters surpass the oil and the free acid by their better colour.

Dimac, the dimeric acid produced in bulk since 1959 by this company's own process, is now available in several grades. (Stand 26.)

Emulsion Paint

Emulsion paints based on p.v.a., vinyl acetate homopolymers and acrylates will form the main display of **Vinyl Products Ltd.**, Carshalton, Surrey. Technical advantages of each type will be illustrated and also the properties of an emulsion paint depend on particle size and water phase as well as on the polymer type.

A separate display dealing with industrial finishes will feature a specially developed p.v.a. emulsion for the manufacture of stoving primers; two new internally plasticised acrylic copolymer solutions for motor-car and other air-drying finishes, producing good gloss from the gun, excellent colour and gloss retention, and high petrol resistance; and a new thermosetting acrylic copolymer solution, which condenses with epoxy resins, and is claimed to give one-coat finishes of excellent adhesion and stain resistance. (Stand 29.)

Acrylic Resins

The range of Scopacron thermosetting acrylic resins will be exhibited by **Styrene Co-polymers Ltd.**, 1 Roebuck Lane, Sale, Cheshire. These products are now being manufactured and sold under licence from the Pittsburgh Plate Glass International S.A. Emphasis is on the use of the Scopacron resins in the appliance enamel field.

Other recent additions to the company's range of products will be exhibited, including Scopol 66NM, a vinyl toluene modified alkyd in aliphatic solvent solution, and Scoplas 10X, a trimethylolpropane modified plasticising alkyd. (Stand 63.)

Laboratory Mixer

Mixers of the latest types will be on view and at work to demonstrate blade actions on the stand of **Winkworth Machinery Ltd.**, 65 High Street, Staines, Middlesex. In particular there will be a one quart stainless steel laboratory mixer with Kopp variator speed control, enabling a variety of blade speeds to be demonstrated in relation to their application when used with materials of widely differing viscosity.

A special one gallon mixer adapted for the heavy duties associated with the resin/glass fibre doughs and the like will also be demonstrated. (Stand 48.)

New Research Materials

In addition to a display of their processed drying oils, etc., and a model stand oil-making plant, **Younghusband Stephens and Co. Ltd.**, London Road, Barking, Essex, will be presenting examples and details of their newly-developed and research materials. Prominent among these will be their extended range of Esterols (methyl esters) including those derived from linseed, soyabean and tung oils, along with methyl esters derived from Alkybol and coconut oil which are in course of development.

Ybcol 840 (cyclopentadienated oil), rated Category 'A' in the Timber Development Association's exposure tests, will be demonstrated, and a new non-ionic universal grinding oil, suggested as a medium for universal tinters, will be shown for the first time.

Advantages of Plastycol in mastics and caulking compounds and the use of certain blown drying, semi-drying and non-drying oils as sealant-binders and plasticisers will be described. (Stand 64.)

Overseas News

BIG NITROGEN EXPANSION PLANS FOR DOW CHEMICAL, ARMOUR AND SOLAR

A \$30 MILLION project is in hand for Dow Chemical, at their Louisiana division, Plaquemine. New ammonia units and expanded capacity for vinyl chloride, chlorine, and caustic soda are planned over the next two years.

Already under construction is a \$12 million expansion at Plaquemine for a high pressure polythene plant due to be in operation by the autumn. Dow's total investment at this site will be over \$100 million.

Plans to boost nitrogen capacity either by acquiring an existing plant or by building a new one have been announced by Armour and Co. At present, some 75% of the nitrogen output at Armour's Crystal City, Mo., plant is used in the company's own fertiliser production. This plant provides, however, less than 25% of the nitrogen Armour expect to need for future marketing programmes. In due course, the company expects to expand its phosphate facilities and under study still is the possibility of Armour entering the potash field.

Expansion plans costing \$2 million and embracing their ammonia, urea, nitric acid and nitrate facilities at their Lima, Ohio, plant are under way by Solar Nitrogen Chemicals Inc. Ammonia output will be increased by 25,000 tons annually when the plant comes on stream this year.

Demand for ammonia, urea and nitrogen solutions in the mid-West is growing fast, the company states. Solar Nitrogen are jointly owned by Standard Oil (Ohio) and Atlas Powder Co.

India Orders Chemicals from Germany

The Indian Government has granted a number of orders for chemical products to German concerns. These include one worth a total of £227,000 for some 15,000 tonnes of ammonium sulphate, half from Ruhr-Stickstoff AG, Bochum, and half from Farbwerke Hoechst AG, Frankfurt-on-Main; one for 31,800 tonnes of ammonium sulphate-nitrate from Ruhr-Stickstoff worth £620,000; and one for 10,000 tonnes of the same material from the Hauptvertriebsstelle für Düngemittel, worth £195,000.

Hungary to Buy European Chemical Plant

The Hungarian foreign trade body Komplex is negotiating with "certain western European firms" about future importation of a complete polyvinyl chloride plant of 6,000 tonnes annual capacity. The plant will be erected at Berente in Hungary, and will use primarily carbide and later natural gas as a starting material. Also to be installed

at Berente is one of two complete caustic soda plants purchased from the Krebs concern of Paris; the other will be erected at the Hungaria Chemical Works in Budapest. The plants, which cost together some \$2 million U.S., will each have an annual capacity of some 10,000 tonnes. The Hungaria plant should start production in the first quarter of 1962, and that at Berente later the same year.

World's Largest Single H₂SO₄ Unit on Stream in U.S.

The world's largest single sulphuric acid producing unit owned by Dixon Chemical Industries and located at Paulsboro, New Jersey, U.S., is now on stream. This new sludge acid recovery plant, costing over \$5 million, was designed and built by Chemical Construction Corporation, using the Chemic process.

The unit has a production capacity of 715 tons/day of 98% acid, processing acid sludge obtained from oil refineries located between the Delaware Valley and Southern New England. The plant has extreme flexibility through the range of 120% to 25% of design capacity. Additionally, acid feedstock varies widely, i.e. analyses range from 90% acid, 4% water and 6% hydrocarbons to only 75% acid, 4% water and 21% hydrocarbons. Overall acid recovery from the sludge averages 95%.

Israel to Make Polypropylene

Annual output of polypropylene in Israel is scheduled to reach 1,100 tons within the next twelve months, and machinery for its production, worth some £700,000, has already been ordered in Germany. This was disclosed last week by Mr. I. Rogosin, chairman of Rogosin-Israel Industries, who recently arrived in Europe.

Hoechst may Co-operate in Plans for Algerian Plant

Farbwerke Hoechst AG, Frankfurt-on-Main, are expected to take up an interest in a chemical plant planned for Arzew, near Oran, in Algeria. Main planners of the scheme are the French company, Nobel-Bozel, who have been exploiting salt deposits at Arzew for some years and who have bought a site there on which the chemical plant is to be erected. Power for the plant will be by the natural gas of the nearby Hassi-R'Mel deposits.

Petrochemicals Industry Planned in Saudi Arabia

Sheikh Abdullah el Tariqi of Saudi Arabia has stated in an interview with a Lebanese paper that his country is carrying on negotiations with foreign

companies for the building up of a petrochemical industry there. The Sheikh is responsible for all mining and mineral oil developments in the country.

U.S. Monsanto to Reduce Price of Rubber-grade Styrene

Reduction in the price of rubber-grade styrene monomer by 8/10 of a cent to 11.2 cents/lb. is proposed by Monsanto Chemical Co., U.S., to come into effect by 1 July 1961. By this date, the company expects increased production and production economies at its Texas City, Texas, plant to justify the reduction. Styrene capacity at Texas City is being increased by 200 million lb. to 560 million lb. a year.

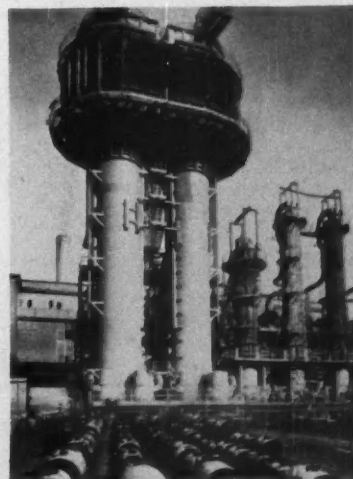
At present rubber-grade styrene is sold under a contract escalation clause, based on benzene and labour costs. The company plans a lower price schedule for styrene sold on a flat price basis.

Terephthalic Acid from Toluol at Essen Plant

An experimental plant for the production of terephthalic acid from toluol has been opened in Essen by Bergbau-Forschung GmbH, the research association of the West German coal-mining industry. Dimethylphthalic acid and pyromellithic acid are to be produced from xylol base at the same plant. The terephthalic acid is produced by a method which entails the chloromethylation of toluol by a continuous process with short reaction periods and an oxidation of the resultant compound to terephthalic acid, either directly or after saponification with nitric acid.

Hüls Styrene Production Record

Annual capacity of 84,000 tons of styrene monomer "has consolidated the reputation of Chemische Werke Hüls, as the greatest producer of styrene on the European Continent". This was stated with the racking of 400,000 tons styrene, on 4 March. This new production record of Hüls gives evidence of the rising



Chemische Werke Hüls styrene plant, stated to be largest in Europe. Capacity is 84,000 tonnes a year

importance of a chemical raw material considered a laboratory curiosity only 30 years ago.

Hungarian Silver Nitrate for Britain ?

The Chemolimpex foreign trade association of Hungary are at present conducting negotiations with a U.K. company concerning possible future sale to Britain by Hungary of silver nitrate worth some U.S. \$100,000.

Montreal Plant to Double Capacity

A multi-million dollar expansion programme at the Montreal East plant of Carbide Chemicals Co., Division of Union Carbide Canada, is announced in which existing productive facilities for ethylene oxide and oxide derivatives will be doubled. When completed in the first quarter of 1961, the Montreal East plant will be one of Canada's largest chemical complexes.

Dow Australian Associate to Expand Manufacture

Expansion of manufacturing facilities of C.S.R.C.-Dow Pty. Ltd. at Altona, near Melbourne, Australia, includes styrene monomer production, for which a long-term contract is held with Australian Synthetic Rubber Co. and C.S.R. Chemicals Pty. Ltd. The Australian company will also produce ethylene dichloride, caustic soda and chlorine. Ethylene dichloride will be supplied to B. F. Goodrich-C.S.R. Chemicals Pty. Ltd., a newly formed subsidiary of The B. F. Goodrich Co., for use in the production of polyvinyl chloride resins. Caustic soda and chlorine will be available to Australian consumers. This expansion represents an additional investment of over £A1½ million in the Altona plant.

Witco/Richfield Oil Merger for Dodecylbenzene Plant

Witco Chemical Co. and Richfield Oil Corporation have formed Witfield Chemical Corporation, a jointly owned venture. The new company will build and operate a \$1.75 million petrochemical plant in Los Angeles to produce dodecylbenzene, a raw material used in manufacturing detergents.

Ammonia Sales Agreement by Tennessee and S. Nitrogen

Under the terms of an agreement signed by Tennessee Corporation and Southern Nitrogen, the latter company will buy 30% of the yearly output of the new plant Tennessee Corporation are to build at East Tampa, Florida. If the Tennessee plant runs at its full capacity of over 100,000 tons, Southern Nitrogen will thus take some 30,000 tons a year for their subsidiary, Florida Nitrogen, at Tampa, where lime nitrate and nitrogen solution sections are already in operation; a nitric acid section will be completed in the spring. Total cost of the plant is estimated at \$2 million.

Tennessee's phosphoric division will operate the ammonia plant which is

expected to be completed by the end of 1961. The division will use much of the ammonia itself in its diammonium phosphate operation at East Tampa.

Southern Nitrogen are to start a multi-million dollar expansion of their Savannah, Georgia, plant "in the near future". At this plant the company makes ammonia, nitric acid and ammonium nitrate solution; nitric acid and ammonium nitrate solution are made at Tampa. The Georgia expansion, plus the new ammonia source in Florida, is estimated to increase Southern Nitrogen's combined output 30%. The materials produced are mostly converted into fertilisers.

Cyanamid and Pharmaceuticals Development in Australia

The visit of Mr. R. T. Bogan, executive director of Cyanamid International, to Sydney, Australia, is reported to be connected with large-scale development of the Australian pharmaceutical and general chemical industry.

Cyanamid have been exploring with Drug Houses of Australia the formation of a joint company there, and further developments are expected within 12 months. D.H.A. has been making the Lederle range of pharmaceutical products by importing the essential overseas raw materials and formulating them under a 12-year-old agreement due to expire shortly.

Scandium Extraction in South Australia

Australian Prime Minister, Mr. Menzies, recently inspected an extraction process for scandium, which may become the basis for a new chemical industry in South Australia. The element is derived

from uranium residues at the Port Pirie chemical treatment plant.

There is a world scarcity of the mineral and exceedingly high prices are being offered for it, it is reported. Plant devised to extract element will be transferred to Port Pirie from Thebarton.

Production of scandium oxide is said to represent the culmination of three years' intensive effort by laboratory staffs to evolve a commercial process.

New U.S. Sodium Chlorate Plant

Penn-Olin Chemical Co. are now being formed as a joint subsidiary of Pennsalt Chemicals Corporation and Olin Mathieson Chemical Corporation. The subsidiary, a \$6,500,000 venture, has been organised to produce sodium chlorate and other chlorate compounds, and will be owned equally by the two corporations. Preliminary engineering has been completed, and construction is expected to start within 90 days on a 25,000-tons-a-year plant at Calvert City, Ky.

Pennsalt have produced sodium and potassium chlorate for many years at Portland, Ore. Recently they also built an ammonium perchlorate plant.

New Dewaxing Unit for German B.P. Associate

A new dewaxing unit is being erected at the Neuhof Refinery near Hamburg, of Oelwerke Julius Schindler G.m.b.H., one of BP's associate companies. The plant will have a capacity of 350 metric tons a day, and will produce high viscosity lubricating oils. The new dewaxer, with its ancillary equipment, will cost £1.7 million and will be operating in 1961.

U.S.I. and Spencer Chemicals Market New Powdered Polythene in America

FINELY divided polythene has been marketed by two U.S. companies, U.S. Industrial Chemicals, a division of National Distillers, and Spencer Chemicals. U.S.I. are to start up a 2 million lb.-a-year semi-commercial plant in March at Tuscola, Illinois, while Spencer Chemicals hope to have a pilot plant in operation at their Orange, Texas, works this summer. Grinding facilities are also being put in to make the special powdered form of polythene used in their process.

Two types of polythene are being offered by U.S.I. under the trade name Microthene. For one, type a solution process is used that produces resin mainly in a size range under 200 mesh. The second type is produced by mechanical grinding in a coarser range from 50 to 200 mesh. Both polythene materials are available as low-density high-melt-index resin and as an intermediate density, medium-melt-index resin. Prices will be initially 65 cents/lb. for the fine grade and 40 cents/lb. for the coarser material.

New applications suggested for microthene polythene include coatings for textiles, paper, metal and glass, and also for large mouldings, such as drums and

tanks. The polythene powder can be used in water or alcohol dispersions or as a paste as well as in powder form.

Spencer Chemicals make their powdered polythene using the Engel process, licensed to them by Vaessen Schoemaker Co., Holland. They will supply fabricators with powdered resin and will also licence the Engel process for making large, hollow moulded products.

In the Engel process powdered polythene is fused with heat in a mould. The polythene forms as a skin on the inside of the mould. Excess powder is then shaken out and the mould reheated to smooth out the inner polythene surface. Nylon and polypropylene can also be used, it is stated. Although standard grades of polythene in powdered form can be used Spencer are engaged in developing improved grades of resin.

Market outlets for the material and process, according to Spencer, are in shipping containers, Tote boxes, and tanks, and also for making such products as boats, baths, and furniture. In Europe it is understood that powdered polythene has been used as an additive in waxes and car polishes.

COMMERCIAL-SCALE PARTIAL OXIDATION OF METHANE DEVELOPED IN EAST EUROPE

A WORKING study of the commercial-scale partial oxidation of methane involving the operation of a pilot plant has been carried through under the Rumanian-Hungarian mutual economic assistance plan. Antal László and András Németh of the Hungarian Mineral Oil and Natural Gas Research Institute at Veszprém and Mihail Moldovan and Constantin Cârlogan of the Rumanian-Hungarian Experimental Unit at Buciumeni, have been concerned with the operation of the project, aims of which were to test the commercial potentialities of a production process and the reliability of the intended materials and equipment for the process in continuous operation (*Chemische Technik* 1959, No. 12).

The plant used for the project was situated in Rumania. It had a capacity allowing the processing of 2,000 cu. m. of methane an hour. Gas produced consisted of acetylene and synthesis gas ($\text{CO} + \text{H}_2$).

Before the pilot plant started on commercial production, two test periods took place—each of 1,000 operating hours—the first with gases which had not been preliminarily heated and the second with gases which had been preliminarily heated. The first period was to determine the basis of the new process and how best the process should be carried out and set into action in the first place.

Second Set of Tests

In the second set of tests methane was fed into the unit at volumes of between 1,540 and 2,315 cu. m. an hour, gas mixtures with an O_2 volume percentage of from 38.4 to 40.2 were used as feedstuff, temperatures on leaving the pre-heating unit were set at between 380°C and 455°C for methane and between 220°C and 411°C for O_2 and temperatures for the mixture in the diffuser were set at between 320°C and 385°C.

These tests and observations made during the primary production on a commercial scale—which was so successful that gas produced during the period could be led straight to nearby existing plant for further processing into acetone—resulted in the determination of optimum process conditions. These conditions result in the production of a synthesis gas consisting of 3.6 to 4% CO_2 , 7.5% C_2H_2 , 25 to 26% CO , 55 to 57% H_2 , 0.2 to 0.4% and 3.5% CH_4 . The conditions are as follows: 1,750 to 1,830 cu. m. of methane an hour for processing; a methane-oxygen ratio of 1.5 preheater exit temperature for methane of 430°C; preheater exit temperature for oxygen of 400°C; temperature of gas mixture in diffuser of 380°C; reactor resistance of 600 to 900 mm. W.S.; pressure behind the combustion area of 80 to 160 mm. W.S.; temperature of the product gas behind

the reactor of 64°C to 74°C; water for cooling purposes 60 cu. m. an hour; and current in electro-filter needed for the removal of carbon black of from 20 to 35 milliamperes.

The problem of carbon black formation during the process is reported to be a serious one, since the quantities formed soon wreck equipment used for processing of the synthesis gas, primarily damaging the catalysts in the acetone plant. Some 60% of the carbon black is removed by the coolant water and almost all the rest dispelled after preliminary washing by an electro-static filter. It was proved that, although this did not make for optimum production, a quantity of

Endowment of Wolfson Research Professorship

THE offer of the Isaac Wolfson Foundation to create a special fund of £200,000 for the endowment of a research professorship has been accepted "with warmest thanks" by the Council of the Royal Society.

The Chair is to be held by "a distinguished British scientist who will devote the whole of his time to research in such fields as the president and Council of the Society from time to time think appropriate". The first holder, not yet appointed, will work in the physical sciences "or their borderlines with biology".

Flexible Tanks for Liquid Shipments

TRIALS said to have been completely successful have recently been carried out with flexible tanks for the shipment of liquids as deck cargo, although those reported so far relate only to two trial runs across the North Sea.

Manufacturers of the tank, the Portolite, are Marston Excelsior Ltd., Ford Houses, Wolverhampton, Staffs, who collaborated with the Holland Steamship Co. and British Amsterdam Maritime Agencies Ltd., in the tests with a view to using such tanks for cod liver oil, Photine and tannin oil on runs from Hull to the Continent.

Despite the extremely bad weather met during one voyage the tank, which was made fast to a pallet secured to a hatch cover, arrived undamaged, and the ship's captain reported it to be "a perfectly safe and stable deck cargo."

Drawback on Fibres

The Board of Trade is now considering an application for allowance of drawback of duty on imports of dyed staple fibre made from vinyl chloride and acrylonitrile used for spinning synthetic yarns. Representations may be made to the B.o.T. any time before 25 March.

over the planned 2,000 cu. m. of methane an hour could be fed into the unit.

Temperature of the gas mixture in the diffuser was set in the optimum figures at the upper level of those experimented with, since it had been shown that the higher this temperature the higher the acetylene yield. At the date of the entry of the report the plant was still producing an acetylene yield equal to that determined with a mixture temperature of 380°C—some 7.5%. Important, too, for the further processing of the product gas is the low oxygen content of around 0.2%, a percentage normally higher with higher gas mixture heats.

The pilot plant took up continuous production after the end of the first period of commercial production, the construction of the reactor having been designed for such operation. With simple control and servicing only needed for the unit and a satisfactory level of safety, the plant has worked with only minor interruptions. Major working parts have proved to be satisfactory.

International Standards for Aromatic Hydrocarbons

By the time of the next meeting of the committee of the International Standards Organisation on aromatic hydrocarbons, envisaged for 1961, it is hoped to put forward draft proposals for general approval.

At a recent meeting the committee discussed proposed specifications and methods of test for benzenes, toluenes and xylenes. Special consideration was given to questions of sampling, conversion of specific gravity data into densities at the standard reference temperature of 20°C, determination of total sulphur content, distillation test methods and terminology. Working groups have been set up to deal with these items.

O.E.E.C. Seminar on Improvement of Chemistry Teaching

A seminar on status and development of the teaching of chemistry was held from 29 February to 11 March at Greystones, Ireland, organised by the O.E.E.C. Office for Scientific and Technical Personnel, in co-operation with the Irish Ministry of Education. The seminar considered the required conditions and possibilities of a revision of chemistry teaching based on knowledge of the atom; of pruning the subject matter so as to give more time to fundamentals without neglecting adequate experimental work; and of teaching chemical principles in such a way that they play a role in training the intellect of the pupil.

Herald Research Reactor Goes Critical

The 'Herald' reactor built for U.K.A.E.A. by the A.E.I./John Thompson Nuclear Energy Co. Ltd., went critical early last week, and will be used for nuclear research work requiring intense neutron beams, and for irradiation-damage studies on reactor materials.

Water-repellant Surfaces Surveyed by Professor Adams

PRACTICAL applications of water repellent surfaces followed by an account of the underlying physics of water repellancy were dealt with by Professor N. K. Adams at a recent meeting of London Section, Royal Institute of Chemistry with the Kingston Technical College Chemical Society.

Derivation of Young's equation $W_{SL} = \gamma_L (1 + \cos \theta)$ where W_{SL} is the work required to separate the solid form from the liquid, γ_L is the surface tension of the liquid and θ is the angle of contact, were considered by Professor Adams. He mentioned also the importance of distinguishing between W_{SL} for the solid surface free from an adsorbed film of liquid (via vapour) and W_{SL} for the solid surface with this film.

The largest contact angles normally obtainable for water surfaces are found when the solid surface consists entirely of CH_3 groups, as in solid paraffins. Angles of up to 110° are obtained on these, but smaller angles (circ. 94°) are found where many CH_2 groups are exposed, as in polythene. Stearic acid

behaves in an interesting manner, giving contact angles of $100-105^\circ$ on a naturally solidified surface, but on cut surfaces angles that may be as low as 50° because of the exposure of COOH groups.

Prof. Adam discussed contact angle hysteresis: the angle of contact for a liquid advancing over a dry surface is always greater than θ for the liquid receding from the surface.

The very great and permanent water repellency of a number of natural surfaces (such as the feathers of water-fowl, the surfaces of the water-plant *Salvinia* and the plastron of underwater-living insects) is explained by the work of Cassie and Baxter, who have shown that unusually high average angles of contact could be obtained on surfaces pierced by very small, regularly spaced holes. They showed that in surfaces, where numerous holes of about $5-7\mu$ in diameter were evenly spaced, $\theta - f_1 \cos \theta - f_2$, where f_1 is the fraction of area where the liquid touches the solid and f_2 is the fraction where it is in contact with air in the holes.

New Plastics to Help Industry

INDUSTRY as a whole will benefit from research now going on into the production of new plastics and other materials able to resist the extremely high temperatures required for rocket and other high speed space flight projects, said Dr. V. E. Yarsley, of Yarsley Research Laboratories Ltd., on 23 February, in a lecture on 'Plastics for high temperatures'.

It was clear, said Dr. Yarsley, that in the aircraft and spacecraft field, plastics had a tough assignment and it was likely that it would meet equally tough competition from ceramics and special metals. But even if the semi-inorganic or inorganic polymers did not attain significant heat resistance beyond the

1,000°F already attained, the knowledge now being gained of the mechanics of both the building up and the breaking down of polymers at those high temperatures must be of enormous advantage to the plastics industry and to the many industries which it served.

It seemed to him as a scientific observer that the aircraft and guided missile industries were well ahead of the synthetic materials at present available, or indeed likely to be available in the foreseeable future, but the intensive research had taken the industry a long way towards the production of materials which, though inadequate for space flight, would find many industry applications which were as yet unsatisfied.

Vermiculite Packaging Reduces Bromine Hazard

THE well-known hazards involved in the movement of bromine are reported to have been considerably reduced with the introduction of vermiculite packaging, imported into the U.K. by Mandoval Ltd., Barrington House, Gresham Street, London E.C.4. The product is claimed to eliminate the dangers of spontaneous combustion present when fractured containers are packed in organic materials such as sawdust, etc.

Vermiculite has now been adopted exclusively as a packaging material for bromine by the Dead Sea Works Ltd., Israel, producers of a large proportion of the chemical entering this country; and is also reported to be utilised by Boots Pure Drug Co. Ltd., for packaging of corrosive and inflammable materials, and likewise by Glaxo Laboratories, who use it for packing vaccines.

Fuel for Japanese Nuclear Station

Supply of natural uranium fuel elements for the nuclear power station which the General Electric Co. are to build in Japan was arranged in London this week between the U.K.A.E.A. and the Japan Atomic Power Co. The arrangements will govern supply of new fuel and repurchase of irradiated fuel during the first 10 years of the reactor's operation.

A.P.V. Benzole Defronting Unit

In a note appended to the description of the new benzole defronting unit of the Appleby-Frodingham Co. (CHEMICAL AGE, 20 February, p. 324) it was stated that steam consumption was less than 11.8 lb./gall. The A.P.V. Co. Ltd., who designed and constructed the plant state that steam consumption is in fact in the region of 1.8 lb./gall.

Society of Chem. Industry Nominates Sir A. Fleck as New President

SIR ALEXANDER FLECK, whose retirement from the chairmanship of I.C.I. was described in the preceding issue of this journal, has now been nominated president of the Society of Chemical Industry in succession to Mr. E. J. Solvay.

A member since 1917, Sir Alexander has received the Messel and Castner Medals of the Society, and will be installed as president at the annual meeting to be held in Bristol next July.

New U.K. Research Labs for Miles Ames

A LARGE basic research programme in England is being established by Miles Laboratories Ltd. to supplement the already extensive research carried out by Miles Laboratories Inc. in the U.S. The new laboratories will be at Stoke Court, Stoke Poges, Bucks., and they will provide facilities for fundamental work in chemistry, biochemistry and pharmacology, including necessary animal accommodation.

Primary aim of the new Miles-Ames laboratories will be the development of new and improved diagnostic tests for the detection of diseases, increasing the existing range marketed by the Ames Company, and the development of new therapeutic agents.

Dr. C. E. Dalgliesh, research director of Miles Laboratories states that Scientific Installations Ltd. (S.I. Group), Salisbury Square, London E.C.4, have been appointed consultants for design and laboratory layout, co-operating with the architect for the entire scheme, Mr. C. B. M. Smith.

Trial Methane Shipments Completed Successfully

SUCCESSFUL completion of the trial stage of voyages with the *Methane Pioneer*, which has made seven runs from the U.S. to North Thames Gas Board's terminal at Canvey Island, is announced by the Gas Council.

The prototype tanker, jointly owned by the Council and Constock International Methane, U.S., will have carried more than 12,000 tons of liquid natural gas converted to town gas by North Thames G.B. by the end of this month, and the information obtained will be used "for the consideration of possible large ship operations."

I.C.I. Ship Liquid Chlorine to Ulster Neoprene Plant

Liquid chlorine for the synthetic rubber plant of the Du Pont Co. (United Kingdom) Ltd. in Northern Ireland is now being shipped in bulk from the I.C.I. Castner-Keller Works, Runcorn. Designed to carry liquid chlorine in pressurised tanks forward of the main hold, the ship on return trips will carry a cargo of neoprene in the main hold.

● **Dr. J. T. Davies, M.A.(Cantab.)**, university lecturer in chemical engineering, Cambridge University, has been appointed to the Chair of Chemical Engineering and to headship of the Department of Chemical Engineering, Birmingham University, from 1 October next.

● **Mr. R. E. McOnie**, at present marketing manager, Shell Chemical Co., will join Shell International Chemical Co. on 16 May prior to taking up a senior appointment with Shell Chemical (Australia) Proprietary Ltd. **Mr. S. W. Farrington**, at present manager of Shell Chemical's polystyrene p.v.c. department, will take over from Mr. McOnie as marketing manager with effect from 1 May. **Mr. C. A. R. Cutler**, head of Polyolefins Division, Shell International Chemical Co., relinquishes this position at the end of March and on 4 April becomes manager of polyolefins department, Shell Chemical Co., and deputy to the marketing manager. **Mr. K. E. C. Emsden**, at present deputy to Mr. Farrington, becomes manager of the polystyrene p.v.c. department with effect from 14 March. Two other new appointments in the Plastics Division of Shell Chemical are **Mr. D. P. H. Tudor-Williams**, from manager of administration and services department, Carrington Research Laboratory, to head of general section, development department, with effect from 1 March; and **Mr. L. A. Muirhead**, section head, polyolefins department, becomes head of the technical section, development department, with effect from 1 May.

● **Mr. Israel Harris Chayen**, at present assistant managing director of British Glues and Chemicals Ltd., has been appointed managing director as from 31 March. He succeeds **Mr. Harold J. Cotes**, who will relinquish his managing directorship after 40 years in that office. Mr. Cotes will continue as chairman.

● **Dr. Ing. Friedrich Jänne**, chairman of Farbwerke Hoechst AG, Frankfurt-on-Main, has been awarded the Grand Order of Merit with Star of the Federal Republic of Germany by the Federal President.

● **Sir Harry Melville**, secretary to the committee of the Privy Council for Scientific and Industrial Research since 1956, and Mason Professor of Chemistry, Birmingham University, 1948-1956, will be granted an hon. D.Sc. at Birmingham University on 15 July.

● **Mr. S. P. Chambers**, I.C.I.'s newly appointed chairman, has resigned from the National Coal Board because of his increased business commitments. The resignation was accepted "with regret" by the Minister of Power, Mr. R. Wood.

● **Sir John Wrightson, Bt.**, chairman of Head Wrightson and Co. Ltd., travelled by air to South Africa on 2 March. He will visit the company's works in Johannesburg and call upon some of the principal customers in the Orange Free State, Vereeniging Park and Pretoria, and expects to have discussions in Salisbury and

PEOPLE in the news

Bulawayo before returning home at the end of March.

● **Mr. P. M. Griffiths** retired from Shell Chemical Company at the end of February after more than 32 years' service with the Royal Dutch/Shell Group. He joined the group in Mexico in 1927, and on his return to England he became refinery manager at Stanlow refinery in Cheshire where he remained until he went on loan to H.M. Government to work on defence problems during the early stages



P. M. Griffiths, who has retired from Shell Chemical Co. after 32 years' service

of the war. He was later appointed manager of manufacturing operations department, Shell Chemical Co., a post he held until October 1958 when he took up a special appointment in the manufacturing director's office.

● **Dr. J. G. M. Bremmer** has been appointed research director of Scottish Agricultural Industries Ltd. with effect from 1 April.

● **Dr. Eric T. Reaville**, an assistant director of research in the organic chemicals division of Monsanto Chemical Co., St. Louis, recently arrived at the Ruabon, works of Monsanto Chemicals Ltd., to take up his new post in the Nickell Laboratories. He will be responsible for a 'long range' research programme to be carried out at the laboratory on behalf of Monsanto's organic chemicals division.

● **Dr. C. A. Bunton**, reader in the Department of Chemistry, University College, London, is to make a British Council lecture and advisory tour of Chile and the Argentine, initiated at the request of Buenos Aires University for a British chemist specialising in the more

physical side of organic chemistry, particularly in the mechanism of reactions.

● New production director from 1 April for the I.C.I. Fibres Division is **Mr. C. I. Rutherford**. He succeeds **Mr. W. F. Osborne**, who is retiring after 34 years' service with the company and its predecessors. Mr. Rutherford, who is 41, has been a director of Fibres Division since September 1958. He began his career with I.C.I. in 1946.

● **Mr. C. F. H. Cuffley** has been appointed shipping adviser to International Minerals and Chemicals, Ltd., Norwich House, Southampton Place, London S.W.1, subsidiary of International Minerals and Chemicals Corporation, Stokie, Illinois, U.S.

● **Dr. Adalbert Farkas** is appointed assistant research director at Houdry Process Corporation, Philadelphia, U.S.

● The election of officers, mentioned in 'People in the News,' 19 December, referred to the council of the Institute of Metals. Due to the transposition of a line of type these elections were ascribed to the Plessey Co. Ltd.

● **Mr. J. B. Kitchin** has been appointed personnel director of I.C.I. Plastics Division in succession to **Dr. R. G. Heyes**, who has combined the responsibilities of personnel and production since 1956. Dr. Heyes remains as production director. Mr. Kitchin, who is 48, has been deputy head of I.C.I. Central Work Study Department in London.

● **Mr. A. G. S. Reid** has been appointed solvents and resins sales manager in southern sales region of Shell Chemical Co. He succeeds **Mr. M. B. Creed** who is to take up a senior appointment, details of which will be announced later.

● **Mr. A. E. Frost** has been appointed to succeed **Mr. J. H. Cotton** as I.C.I. treasurer from 1 April. Mr. Cotton, who retires on 31 March, has completed 32 years' service with the company. Mr. Frost is the author of the Double Taxation Relief Section of Lord Simon's book 'Income Tax'.

● **Mr. Dennis Boyles, M.P.S.**, has been appointed sales manager of the Pharmaceutical Sales Division, Bayer Products Ltd., Kingston-upon-Thames, Surrey.

● **Mr. Russell C. Nelson**, marketing manager of the general products group of Du Pont de Nemours International S.A., has been promoted to director of sales. **Mr. Norman P. Rockwell**, assistant to the export manager of the company's industrial and biochemical department, has been transferred to the Swiss Du Pont de Nemours International as marketing manager for agricultural and industrial chemicals, and will take over some of Mr. Nelson's former duties.

● **Dr. H. H. Hopkins**, reader in optics at Imperial College, has received a grant of £8,100 from the Paul Instrument Fund Committee, for the development of methods of drawing and coating fine glass fibres and their alignment in ordered bundles for the transmission of optical images. **Dr. B. V. Bowden**, principal of the Manchester College of

Science and Technology, has received a £500 supplementary grant for the development of narrow pass band dye filters.

● **Mr. J. C. Carter**, who retires in March from his directorship of John Thompson-Kennicot Ltd., water-treatment engineers, Wolverhampton, has seen more than 50 years' service with John Thompson Ltd., 41 of which have been concerned with water treatment systems. He will be succeeded by **Mr. W. J. Jeavons**, who has been with the former company for the past 15 years.

● **Mr. Adrian C. Furse-Roberts**, deputy treasurer of Du Pont Co. (United Kingdom) Ltd., 76 Jermyn Street, London W.1, has been promoted treasurer and secretary from 1 March. He is succeeded by **Mr. Alec H. Barber**, formerly deputy comptroller of Du Pont's U.K. subsidiary. Mr. Furse-Roberts joined the company in 1957 as comptroller and two years later he became deputy treasurer.

● Since the 1960 *Chemical Age Directory* and *Who's Who* went to press **Dr. N. F. Astbury, M.A., Sc.D.**, succeeded **Dr. A. T. Green, C.B.E.**, as director of the British Ceramic Research Association, whose entry under Research Associations appears in p. 18. Also under this entry the reference to Mellor Laboratories should read Mellor-Green Laboratories.

Obituary

Mr. Harry Orr, M.P.S., works manager and a director of E. R. Squibb and Sons Ltd., manufacturing chemists, Speke, Liverpool, has died aged 60.

Mr. William T. Lockett, a former chief chemist of the Middlesex Main Drainage Department and a past president of the Institute of Sewage Purification, died on 23 February at the age of 73. He was a graduate of the Honours School of Chemistry, Manchester University, and obtained his M.Sc. in 1909, later becoming a Fellow of the Chemical Society.

Professor William Edward Garner, C.B.E., F.R.S., died on 4 March, aged 70 years. For 27 years he occupied the Leverhulme Chair of physical chemistry, Bristol, and was for a time in 1944 chief superintendent of Armaments Research at Fort Halstead. His interest in research covered a wide field and his work on the relation between chain links and physical properties in organic compounds was of fundamental importance; whilst he also did much to explain the action of an important group of catalysts.

The death occurred on 29 February of **Mr. George Taylor, O.B.E., F.R.I.C.**, public analyst, and analytical and consulting chemist of Dr. Bernard Dyer and Partners, 20 Eastcheap, London E.C.3. He was a past president of the Society for Analytical Chemistry and a past president of the Association of Public Analysts.

Will

Mr. Dennis Bernard Godwin Sleath, Midlands area manager for Borax Consolidated Ltd., who died on 28 November, left £8,291 net.

TRADE NOTES

Premier Colloid Mills Extensions

Premier Colloid Mills Ltd., Walton-on-Thames, Surrey, have recently completed the erection of extensions to their main offices and laboratories. These extensions have been planned to centralise the assembly of the company's Colloid mills and mixers. Delivery periods have already been considerably shortened and after-sales-service has been speeded up.

New Factory for Acalor

Acalor (1948) Ltd., Kelvin Way, Crawley, Sussex, chemical engineers announce that owing to the expansion of their plastic fabrication, effluent design and Acalastic linings departments, they have taken over a further factory on the Crawley Estate. The extra space provided will treble present floor space, and will also benefit all departments including the manufacture of acid-resisting cement and the full range of the Acalor products. Enquiries should still be directed to the head office at Kelvin Way.

Hazelock Hose Fittings

Hazelock Ltd., Haddenham, Bucks, have acquired sole manufacturing and selling rights of the hose fittings previously manufactured by the engineering division of Airtech Ltd. The company is to make and market patent couplings and fittings for all types of rubber and plastics hose and tube.

Glasscloth Laminate

Technical Notes 206 are available from Ciba (A.R.L.) Ltd., Duxford, Cambs, describing use of Araldite glasscloth laminate in techniques adopted by the Royal Aircraft Establishment, Bedford.

Aluminium Alkyls

Cyclo Chemicals Ltd., Manfield House, Strand, London W.C.2, have been authorised to sell aluminium alkyls in the U.K. on behalf of the original German manufacturers, the Bergkamen company. The following three alkyl aluminium compounds are at present offered: aluminium tri-isobutyl, di-isobutyl aluminium hydride, aluminium tri-ethyl.

These compounds can be used as Ziegler catalysts for polymerisation of olefins, for synthesis of alcohols and tetraethyl lead and as reducing agents.

Pipe Line Equipment

The range of check valves, pipe line strainers and allied equipment supplied by Charles Winn and Co. Ltd., Granville Street, Birmingham 1, is described in a new illustrated leaflet available from the company.

New Fluorescent Whitener

Theolite MP liquid, described as a new and superior fluorescent whitening agent, designed particularly for use in the paper industry, has just been put on the market by the Dyestuffs Division of I.C.I. The new agent is stated to be much better adapted to the production of "super"-whites than are earlier brands.

Standard pack for the liquid is a 4-gall. metal drum with telescopic spout for easy

pouring, and a larger pack, 6½ gall. returnable polythene drum, can be provided if required.

Silicon Rods

Polycrystalline silicon rods for floating zone crystal growing produced by Tracona Chemical Corporation, are now available through the company's sole U.K. agent, New Metals and Chemicals Co. Ltd., Chancery House, Chancery Lane, London W.C.2. The rods are centreless ground from silicon not previously melted and are offered in standard and made-to-order sizes. Boron content is 1.0 in 10⁶ parts approximately.

High-pressure Flowraters

A new 78-page catalogue describing the company's range of high-capacity flowraters and secondary instruments for indicating, transmitting, integrating and recording is available from Fischer and Porter Ltd., Salterbeck Trading Estate, Workington, Cumberland.

Continuous Processing

The full range of continuous processing machinery developed by the U.S. company W. J. Fitzpatrick Co. is available from Manesty Machines Ltd., Speke, Liverpool 24. These include machines for continuous mixing, blending and dispersions, comminuting, sizing, granulation and pressurised reactions.

Incandescent Heat Co.

The Incandescent Heat Co. Ltd., Smethwick, have formed a Chemical Plant Division to deal with thermal engineering in the process industries. In addition to incandescent equipment, including heat exchangers, high pressure chemical plant and high temperature furnaces, the division manufactures plant under licence from Swenson Evaporator Co., Harvey, Ill., U.S. Swenson equipment includes evaporators, crystallisers, filters, spray dryers, flash coolers and acid-resistant heat exchangers.

Surface Coating Agents

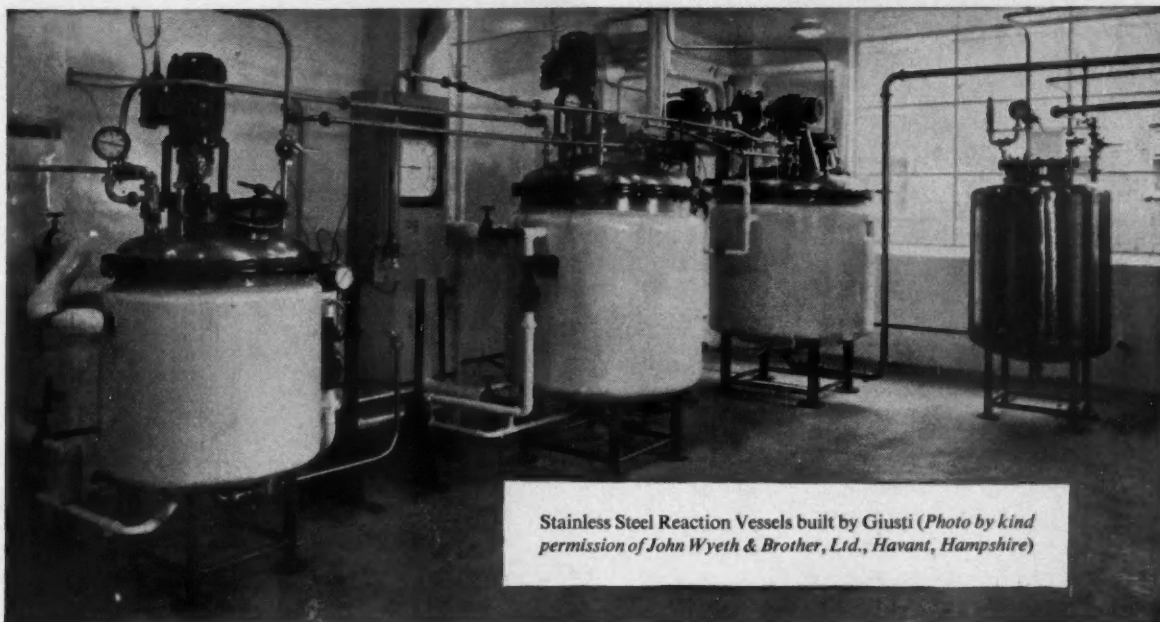
A range of polyurethanes manufactured by the U.S. company Spencer Kellogg and Sons Inc. is being marketed in this country by Beck, Koller and Co. (England) Ltd. They include Spenkel 1209, described as a water reducible vehicle of interest for the formulation of industrial stoving primers; Spenkel F.77-50X, and F.77-60M.S.; stable one-can polyurethanes of excellent chemical resistance and durability.

Change of Name

With effect from 1 April, Durable Plastics Ltd., By-Pass, Guildford, are changing their name to Plastic Coatings Ltd. Address, phone, management and staff remain unchanged.

Lithium Chloride

Lithium chloride has been added to the range of chemicals produced by the Special Chemicals Division, Associated Lead Manufacturers Ltd., Crescent House, Newcastle upon Tyne 1. The company's lithium range is now: powdered petalite, lithium hyroxide, lithium carbonate and lithium chloride.



Stainless Steel Reaction Vessels built by Giusti (Photo by kind permission of John Wyeth & Brother, Ltd., Havant, Hampshire)

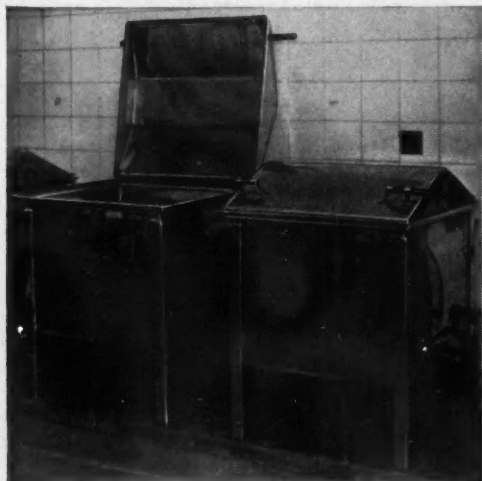
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A recent photo of stainless steel sterilizers made by Giusti and supplied to the M.W.B. Bacteriological Laboratories 25 years ago. (Photo by courtesy of the Metropolitan Water Board)



VESSELS TO A STANDARD OR SPECIALS TO ORDER

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Commercial News

Albright and Wilson

Net profit of Albright and Wilson Ltd. for the year ended 31 December 1959 is £2,433,000 (£1,787,000) and a second interim dividend (to be final) of 13½% on the ordinary capital has been declared. Total dividend, after adjustment for 1959 is equivalent to 18 3/10% on the present capital (13 3/5%).

Barrow, Hepburn and Gale

The whole of the share capital of Colloids Incorporated, New Jersey, U.S., is to be purchased by Barrow, Hepburn and Gale Ltd., 19/25 Grange Road, London, S.E.1. Colloids Inc. specialise in the manufacture of a synthetic sizing material for the textile industry which the U.K. firm has manufactured under royalty for some two years. The sum involved is stated to be in the order of £225,000, and will not necessitate any immediate issue of further capital.

B.T.R. Industries Ltd.

Report of Sir Graham Hayman, chairman of B.T.R. Industries Ltd., Herga House, Vincent Square, London S.W.1, states that immediate results of the heavy reconstruction and expansion programme have placed the group in a stronger position to meet the competitive conditions which must be expected in future, despite the setback in profits in the year ended 3 October 1959.

Since the beginning of the current financial year an increasing number of inquiries have been received from the more important sections of the capital equipment industries, and the forward position has been strengthened by orders received.

Blythe Colour Works

Group net profit for 1959 for Blythe Colour Works Co. Ltd. is announced as £174,438 (£127,297) and dividend is equivalent to 22½% (20%).

Cambridge Instruments

Final dividend of 2½% making a total of 12½% (11½%) has been announced for 1959 by the Cambridge Instrument Co. Ltd. Trading profits for the year were £256,965 (£216,515) after tax.

E.M.I./Henry Simon

Some £15.8 million is the value placed on Henry Simon (Holding) Co. Ltd. under the terms of the proposed offer for the capital to be made by Electrical and Musical Industries Ltd. (See CHEMICAL AGE, 5 March, p. 414.)

Dynamit Nobel AG

The West German chemical and explosives manufacturers, Dynamit Nobel AG, Troisdorf, who recently became associated with the Flick industrial group of that country, announced that 1959 group turnover was higher by 15.6% than 1958. Capacity was used to the full in several plants. Plastics production rose by 13% on 1958

- A. and W. Profit Higher by £646,000
- Evans Medical Raise Capital to £1.55 m.
- B.T.R. Strengthened by Expansion Plans
- Six Firms Join German Ammonia Combine

to a production last year of 71,000 tonnes. Now that the company is associated with the Flick concern Feldmühle AG, it is planned to build a plant for the production of vinyl chloride on Feldmühle's Lülldorf site. This vinyl chloride will be processed to p.v.c. and other products by the neighbouring Dynamit Nobel plant.

E.I. Du Pont de Nemours

Net profit per share for 1959 for E. I. du Pont de Nemours and Co. stood at some \$8.92 (\$7.25), this sum including payments from Du Pont's big General Motors' holding. Record profit-per-share was reached in 1955, with \$9.26. Although total 1959 turnover is not yet known, it is expected to be in the region of \$2,100 million, some \$300 million more than in 1958 despite a fall-off in takings in the last quarter of last year.

Saint-Gobain

Cie. de Saint-Gobain of France have issued bonds to the value of NF85 million for the financing of expansion schemes in their petrochemical, plastics, and glass production. The bonds are for 20 years and carry an interest of 4½%.

German Ammonia Syndicate

Six companies connected with the coal and ferrous metals industries, all from the Saar, have joined the West German Ammonia Syndicate. They are: AG Völklinger Hüttenwerke, Völklingen; ARBED,

Saarbrücken; Halberger Hütte GmbH, Brebach; Neunkircher, Eisenwerk AG Neunkirchen; Röchling'sche Eisen- und Stahlwerke GmbH, Völklingen; and Saarbergwerke AG, Saarbrücken. The syndicate has recently put in a claim for further permission to operate from the German Cartel Bureau and is at present awaiting the result of its bid while operating as usual. Some 64 firms are now members of the syndicate.

Et. Kuhlmann

The French chemical producers, Manufactures de Produits Chimiques, Etablissements Kuhlmann S.A., have raised their total share capital to a new level of NF119.41 million (new francs). The increase brings to the company some NF60 million, to be invested in expansion of present capacities.

NEW COMPANY

COPPER SULPHATE (SALES) LTD. Capital £100. Solicitors: Herbert Smith and Co., 62 London Wall, London, E.C.2.

INCREASE OF CAPITAL

EVANS MEDICAL LTD., Speke, Liverpool 24. Increased by £300,000, beyond the registered capital of £1.25 million.

PERBOC LTD., manufacturers of vitamins, fine chemicals, etc., Belvue Road, Northolt, Middx. Increased by £50,000, beyond the registered capital of £50,000.

Market Reports

NEW SPOT AND FORWARD BUSINESS IS BRISK

LONDON There has been no outstanding feature in the industrial chemicals market during the past week and prices for the most part are steady at recent levels. The movement against contracts has covered good volumes, and new business, both for spot and forward delivery, has been brisk. Export trade continues to make a satisfactory showing in competitive conditions with inquiries covering a wide range of materials.

The seasonal demand for fertilisers is developing, and a strong demand has been reported for sulphate of ammonia.

Creosote oil, phenol and cresylic acid are in steady request among the coal tar products.

MANCHESTER Traders on the Manchester market for heavy chemical products during the past week have reported a fair flow of inquiry and further additions to order books covering a wide range. The textile and allied trades and other leading industrial outlets are

accounting for a satisfactory movement under contracts, with a steady demand for the soda, potash magnesium and ammonia compounds. The general shipping movement keeps up on a steady scale. Demand for fertiliser materials is now fairly brisk, and a regular call for most of the tar products continues.

SCOTLAND Fair volume of business has been transacted during the past week on the Scottish chemical market particularly towards the end. Demands were again varied and spot requirements were well featured.

There was also considerable interest shown in regard to enquiries received and also those pertaining to forward requirements. Quantities, too, were well maintained and in some instances an increased tendency was shown. Movement against contract requirements continues steady.

Prices have not shown much alteration and on the whole remained steady.

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Monsanto**EXCELLENT TECHNICAL SERVICE**

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Monsanto also makes these chemicals for your industry: Santobrite (Monsanto sodium penta-chlorophenate), Penta (Monsanto Penta-chlorophenol).

We also welcome your enquiries for the following imported products which are manufactured by Monsanto Chemical Company, U.S.A.: Acrylonitrile, Santolite Resins, Hydrogenated Bisphenol A, Adipic Acid, "Santicizer" Plasticizers.

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 help industry—
 to bring a
 better future closer.

NEW PATENTS

By permission of the Controller, HM Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

ACCEPTANCES

Open to public inspection 21 April

Treatment of effluents from synthetic resin plants. A.P.V. Co. Ltd. **833 205**
Preparation of 2, 3, 5, 6-tetrachlorobenzoyl halides and their derivatives, particularly for the production of herbicidal compositions. Hooker Electrochemical Co. **833 218**
Recovering anhydrides of organic diacids from gases. Manufactures Des Glaces Et Produits Chimiques De Saint-Gobain, Chauny & Cirey S.A., Des. **833 230**
Propylation of toluene. Mid-Century Corp. **833 357**
Kainic acid and its isomers and their derivatives and method for preparing them. Takeda Pharmaceutical Industries Ltd. **833 358**
Liquid polysiloxanes. Westinghouse Electric Corp. **832 966**
Bleaching washing agents. Henkel & Cie GmbH. **833 361**
Primary electric cell. Dow Chemical Co. **833 367**
Separating niobium and tantalum from materials containing these metals. Ciba Ltd. **833 241**
Thiophosphoric acid esters and their production. Farbenfabriken Bayer AG. **833 244**
Basic ester of phosphorothioic acid and pesticidal compositions containing it. Imperial Chemical Industries Ltd. **832 990**
Oxidation of organic compounds. Imperial Chemical Industries Ltd. [Cognate application 37 144.] **832 995**
Working up of low-pressure polyolefins. Newby, H. (Chemische Werke Huls A.G.) **832 996**
Polymeric material and compositions prepared therefrom. Imperial Chemical Industries Ltd. **833 002**
Treating metallic powders as to increase the density thereof. Commissariat A l'Energie Atomique. **833 262**
Amino-ketoses and process for their manufacture. Ciba Ltd. **833 263**
Manufacture of 2-amino-aldoheptoses. Ciba Ltd. **833 246**
Diquaternary compounds. Wellcome Foundation Ltd. [Cognate application 14 153.] **833 008**
Heating device for granular material. Teldec Telefunken Decca Schallplatten GmbH. **832 922**
Production of toluic acids. Ratusky, J., and Sorm, F. **833 017**
Stabilisation of emulsions. Channel Islands Fine Distillers Ltd. **833 018**
Transformation of aromatic carboxylic acid salts. Imperial Chemical Industries Ltd., and Mason, P. A. **833 019**
Tertiary-butyl substituted *p*-phenylphenols. Imperial Chemical Industries Ltd. **833 022**
Resistance to soiling of regenerated cellulose. American Viscose Corp. **833 284**
Polymerisation process. Imperial Chemical Industries Ltd. **833 042**
Preparation of heterocyclic sulphonamides. Omikron-Gagliardi Soc. Di Fatto. **833 049**
High temperature water-resistant lubricating greases. Cabot Inc., G. L. **833 051**
Cold separation of gas mixtures. Kellogg Co., M. W. **833 052**
Ferromagnetic ferrite materials. Philips Electrical Industries Ltd. **833 053**
Polymerisation catalysts. Imperial Chemical Industries Ltd. **832 929**
Phenoxy-methylpenicillin manufacture. Imperial Chemical Industries Ltd. **833 060**
Synthesis of 1, 1-diaryl-ethanes. American Cyanamid Co. [Addition to 755 363.] **833 066**
Purification of vitamin B₁₂. Uclaf. **833 067**
Processes and apparatus for the production of ultra-pure substances. Siemens & Halske AG. [Addition to 809 250.] **833 290**
Bonding synthetic high polymers to polyurethane

elastomers. General Tire & Rubber Co. **833 075**
Surface-active composition. Boehme Fettchemie GmbH. **833 082**
Production of β -ionone. Glaxo Laboratories Ltd. **833 088**
Magnesium antimonate phosphor. Sylvania Electric Products Inc. **833 301**
Manufacture of polythene films. Imperial Chemical Industries Ltd. **833 092**
Lubricant for continuous casting of readily oxidisable metals. Dow Chemical Co. **833 272**
Purification of isophorone. Distillers Co. Ltd. **833 099**
Reduction process. Imperial Chemical Industries Ltd. **832 939**
Separation of zirconium and hafnium compounds. Du Pont De Nemours & Co., E.I. **833 103**
Methods of manufacturing ferromagnetic ferrites. Philips Electrical Industries Ltd. **833 277**
Burners for the partial combustion of a gasiform hydrocarbon with an oxygen-containing gas. Texaco Development Corp. **832 941**
Production of hydroxylammonium salts. Commercial Solvents Corp. **833 118**
Preparing thermoplastic tapes of varied cross-sections. Dow Chemical Co. **833 126**
Blue disperse dyestuffs of the anthraquinone series. Sandoz Ltd. **833 132**
Method and apparatus for the carbonisation of fluidised materials. Charbonnages De France. **833 135**
Nitroparaffin gels. Commercial Solvents Corp. **833 136**
Method and apparatus for removing solid impurities from fluid suspensions. Owens, T. M. **832 945**
Organosiloxane compositions. Midland Silicones Ltd. **833 141**
Substituted organosiloxanes. Midland Silicones Ltd. **833 142**
Production of hydrophilic substantially fluorine-free silicon dioxide. Flemmet, G. L. **833 143**
Manufacture of hydrocyanic acid by electrical discharge. Manufactures Des Glaces Et Produits Chimiques De Saint-Gobain, Chauny & Cirey S.A., Des. **832 946**
Preparation of surface-active mixtures having a high foaming capacity. Bataafsche Petroleum Maatschappij N.V., De. **833 146**
Production of vinyl-type polymers. Du Pont De Nemours & Co., E.I. **833 147**
Rawolfia alkaloids and their extraction. Ciba Ltd. **833 149**
Pyrometallurgical method for producing purified uranium metal. U.S. Atomic Energy Commission. **833 153**
Ferrite materials and methods of manufacture thereof. Centre National De La Recherche Scientifique. **833 155**
o-Aryl phosphoroamidohydrazidothioates. Dow Chemical Co. **833 156**
Polymer composition and method. Dow Chemical Co. **832 949**
Manufacture of fibres from thermoplastic materials. Manufactures Des Glaces Et Produits Chimiques De Saint-Gobain, Chauny & Cirey S.A., Des. **833 157**
5,5'-Dinitro-2,2'-dichlorohydrobenzoin and its preparation. Soc. Des Usines Chimiques Rhone-Poulenc. **833 161**
Manufacture of carbon black. Columbian Carbon Co. **833 411**
Fluoroaromatic compounds and method of making same. Dow Chemical Co. **833 163**
Alkyne diamine derivatives. Rossi, S. **833 165**
Manufacture of products from plastisols. U.S. Rubber Co. **833 168**
Continuous mixing of alkali cellulose with etherification agents. Henkel & Cie GmbH. **833 173**
Tri(hydroxyethyl) ether of rutin and process for the production thereof. Zyma S.A. **833 174**
Preparation of aromatic carboxylic acids. Olin Mathieson Chemical Corp. **833 175**
Dry seed dressing compositions. Shell Research Ltd. **833 180**
Cyclopentanophenanthrene-compounds. Laboratoires Francais De Chimiotherapie. **833 183**
Process and apparatus for purifying and separating compressed gas mixtures. Union Carbide Corporation. **832 900**
Production of α -glycirrhetic acid and esters thereof. Erba S.p.A., C. **833 184**
Derivatives of thiamine and their production. Takeda Pharmaceutical Industries Ltd. **833 391**
Production of hexahydroterephthalic acid. Hercules Powder Co. **833 185**
Production of pure aluminium hydroxide. Brookmann, K. **833 187**

Concentrating acetoacetic acid amide solutions. Lonza Electric & Chemical Works Ltd. **832 956**
Polymer solutions. Goodrich Co., B. F. **833 193 & 833 192**
Production of polyamide articles. Inventa AG. **833 196**
Hydroforming naphthalenes. Esso Research & Engineering Co. **833 419**
Water-insoluble monazo triazine dyestuffs. Imperial Chemical Industries Ltd. [Cognate application 172.] [Divided out of 825 377.] **833 396**

DIARY DATES

MONDAY 14 MARCH

C.S.—Swansea: Dept. of Chemistry, University College, 5.15 p.m. 'Optical rotatory dispersion in structural organic chemistry', by Dr. W. Klyne.
Soc. Instrument Techn.—with S.C.I.—Liverpool: M.A.N.W.E.B. Industrial Development Centre, Paradise St., 7.15 p.m. 'Automatic titrators and related equipment', by O. A. Patient.

TUESDAY 15 MARCH

O.C.C.A.—London: Royal Horticultural Society's New Hall, Westminster, S.W.1. Twelfth technical exhibition. To 17 March.
S.C.I. with C.S. and R.I.C.—Belfast: Chemistry Lecture Theatre, Queen's University, Belfast, 7.15 p.m. 'Some mechano-chemical effects in corrosion', by Dr. T. P. Hoar.

WEDNESDAY 16 MARCH

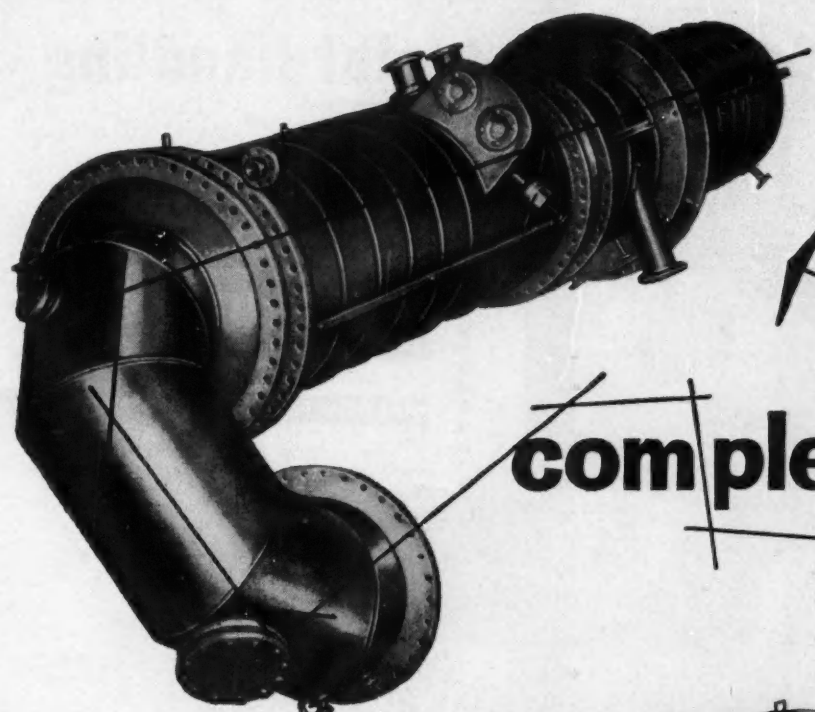
C.S. with R.I.C. and S.C.I.—London: Burlington Hse., Piccadilly, W.1., 8 p.m. 'Complexometric methods of analysis: metals and non-metals', by Dr. T. S. West.
C.S.—Newcastle-upon-Tyne: Chemistry Dept., King's College, 5.30 p.m. 'Progress in the study of heterogeneous catalysis', by Prof. C. Kemball.
Plastics Inst.—Glasgow: More's Hotel, 7.30 p.m. 'P.T.F.E.', by G. W. Bowley.
Plastics Inst.—Newcastle-upon-Tyne: Eldos Grill, 7 p.m. 'Dough moulding compounds', by J. D. Davies.
S.A.C.—London: 'The Feathers', Tudor St., E.C.4., 6.30 p.m. London discussion meeting.
S.26 Portland Pl., W.1., 6.30 p.m. Annual general meeting of Aberdeen and North of Scotland Section, followed by meeting with C.S. and R.I.C. 'Complexometric methods of analysis—metals and non-metals', by Dr. T. S. West.
S.C.I.—Dublin: Chemistry Dept., University College, 7.45 p.m. 'Durability of timber and its enhancement by chemical treatment', by Dr. W. P. K. Findlay.
S.C.I.—London: 14 Belgrave Sq., S.W.1., 6 p.m. 'Mechanism of inhibition in neutral aqueous solutions', by Miss D. M. Brasher.
S.C.I. with R.I.C.—London: University College, Gower St., W.C.1., 6.30 p.m. 'High temperature reactions involving condensed phases', by Prof. F. D. Richardson.
S.C.I. with R.I.C.—Newport: Newport and Monmouthshire College of Technology, 7 p.m. 'Selection of management for the chemical industry', by J. E. V. Tyack.
Soc. Instrument Techn.—London: Manson Hse., 26 Portland Pl., W.1., 6.30 p.m. 'Simulation of a large chemical plant on an electronic analogue computer', by A. H. Doveton and K. C. W. Pedder.

THURSDAY 17 MARCH

C.S.—Edinburgh: North British Station Hotel, 7 p.m. Papers from Scottish Agricultural Industries Ltd., Cerebos Ltd., and Dept. of Chemistry, The University.
C.S. with R.I.C. and S.C.I.—London: 14 Belgrave Sq., S.W.1., 6.30 p.m. 'X-ray fluorescence analysis', by J. R. Stansfield.
R.S.—London: Burlington Hse., Piccadilly, W.1., 4.30 p.m. Ordinary meeting.
S.C.I.—Edinburgh: North British Hotel, Princes St., 7 p.m. Annual general meeting of Edinburgh Section followed by ordinary meeting.
S.C.I.—Grangemouth: B.P. Refinery, 7 p.m. Annual general meeting of Stirlingshire section, followed by ordinary meeting with R.I.C. and Inst. Petroleum, 'Colour', by D. A. Downey.
S.C.I.—London: 14 Belgrave Sq., W.1., 6 p.m. 'Floorings, old and new', by L. H. Griffiths.

FRIDAY 18 MARCH

C.S.—Glasgow: Royal College of Science and Technology, 7.15 p.m. Meeting for the reading of original papers.
Plastics Inst.—Birmingham: James Watt memorial Institute, 6.30 p.m. 'Silicones in the plastics and rubber industries', by P. A. J. Gata.
R.I.—London: 21 Albemarle St., W.1., 9 p.m. 'Infra-red radiation', by Prof. R. V. Jones.
S.A.C. with S.C.I.—London: School of Pharmacy, Brunswick Sq., W.C.1., 6.30 p.m. 'Techniques of automatic analysis', by Drs. J. F. Brown and L. D. Wootton.
S.C.I. with R.I.C.—Seascale: Windscale Club, 8 p.m. 'Semi-conducting compounds and their applications', by Dr. D. A. Wright.



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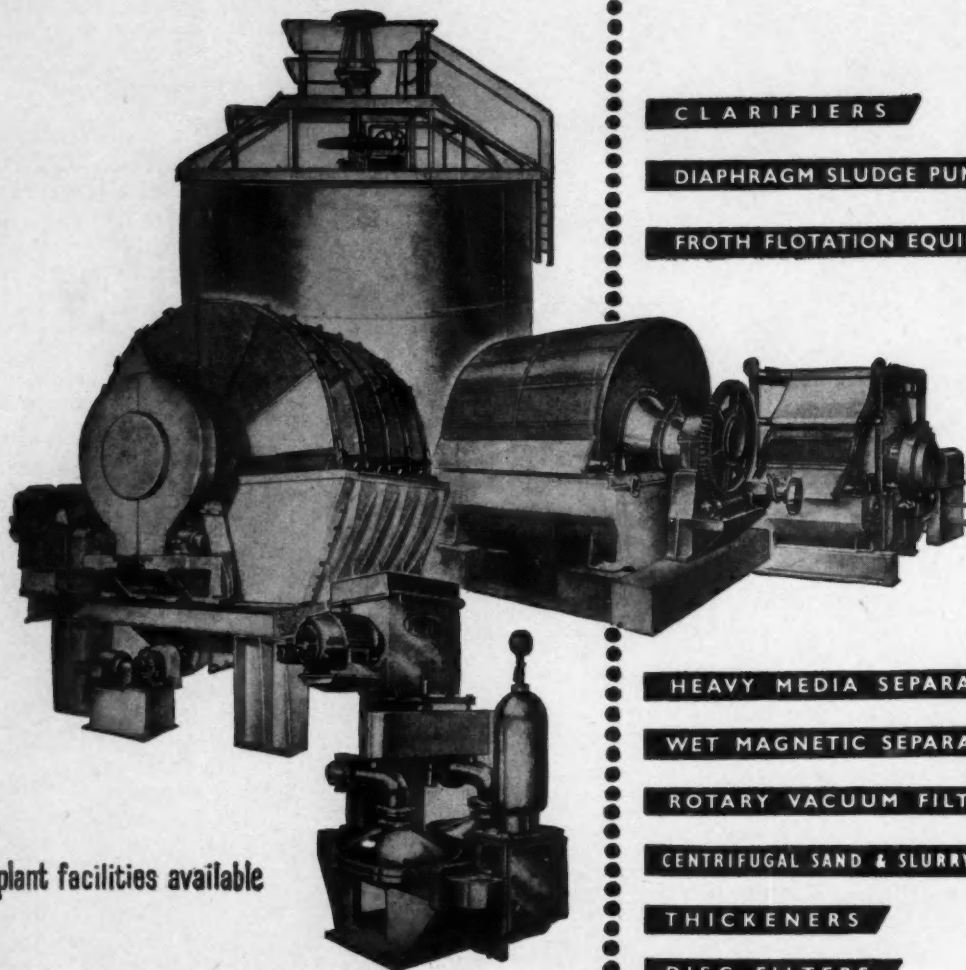


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